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CANADA  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH

ANNUAL REPORT

OF THE

MINERAL PRODUCTION OF  
CANADA

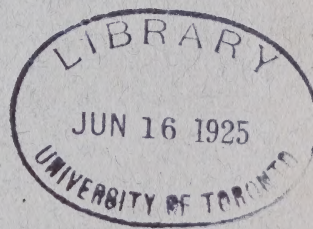
DURING THE CALENDAR YEAR

1923

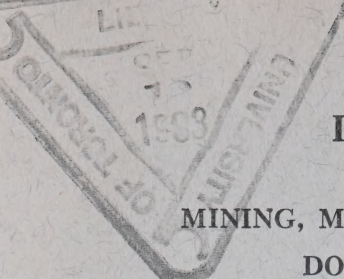
Published by Authority of the Hon. Thos. A. Low, M.P.,  
Minister of Trade and Commerce



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1925



Price, 50 cents.



# LIST OF PUBLICATIONS

## PREPARED IN THE MINING, METALLURGICAL AND CHEMICAL BRANCH DOMINION BUREAU OF STATISTICS

### (1) Mineral Production (Mining and Metallurgy).

#### *General Reports—*

- (a) **Annual Report on the Mineral Production of Canada.**
- (b) **Preliminary Reports (semi-annual) on the Mineral Production of Canada.**

#### *Coal—*

- (a) **Annual Report on Coal Statistics for Canada.**
- (b) **Monthly Report on Coal Statistics for Canada.**

In addition to the foregoing reports on mineral production a series of annual bulletins is in preparation each of which will contain statistics relative to a particular metal or non-metallic mineral or to a special section of the mineral industry, and the series when complete will cover every phase of mineral production in Canada.

### (2) Statistics of Manufactures, based chiefly on minerals.

Reports on the sections of manufactures covered by the Mining, Metallurgical and Chemical Branch are issued as follows:—

#### *Annual—*

- (a.) **Iron and Steel and Their Products:** Pig Iron and Ferro-Alloys, Steel and Rolled Products—Castings and Forgings—Boilers and Engines—Agricultural Implements—Industrial Machinery—Office and Household Machinery—Automobiles—Automobile Accessories—Bicycles—Railway Rolling Stock—Heating and Ventilating Equipment—Wire and Wire Goods—Sheet Metal Products—Hardware and Tools—Miscellaneous Iron and Steel Products.
- (b.) **Manufactures of Non-Ferrous Metals:** Aluminium Ware—Brass and Copper Products—Lead, Tin and Zinc Products—Manufactures of the Precious Metals—Electrical Apparatus and Supplies—Miscellaneous Non-Ferrous Metal Goods.
- (c.) **Manufactures of the Non-Metallic Minerals:** Aerated Waters—Asbestos and Allied Products—Cement Products and Sand-Lime Brick—Coke and By-Products—Gas, Illuminating and Fuel—Glass (blown, cut, ornamental, etc.)—Monumental and Ornamental Stone—Petroleum Products—Miscellaneous Manufactures of the Non-Metallic Mineral Products including (a) Artificial Abrasives; (b) Abrasives Products; (c) Artificial Graphite and Electrodes; (d) Fuel Briquettes; (e) Gypsum Products; (f) Mica Trimming.
- (d.) **Chemicals and Allied Products:** Coal Tar and its Products—Acids, Alkalies, Salts and Compressed Gases—Explosives, Ammunition, Fireworks and Matches—Fertilizers—Medicinal and Pharmaceutical Preparations—Paints, Pigments and Varnishes—Soaps, Washing Compounds and Toilet Preparations—Inks, Dyes and Colours—Wood Distillates and Extracts—Miscellaneous Chemical Products.

#### *Monthly—*

- (a) **Production of Iron and Steel in Canada.**

In addition to the foregoing printed summary reports, a series of bulletins is being prepared, each of which deals with a particular phase of manufactures.

### (3) Special Reports.

- (a) **Report on the Consumption of Prepared Non-Metallic Minerals in Canada.**
- (b) **Report on the Consumption of Mine and Mill Materials in Canada.**

CANADA  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH

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ANNUAL REPORT

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1923

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## NOTE ON STATISTICS OF PRODUCTION

In the collection of production data, the Dominion Bureau of Statistics makes a division between primary and secondary production. In the first-named class, there are separate sections for the collection of statistics on (a) **Agricultural Products**, (b) **Furs**, (c) **Fish**, (d) **Forest Products**, (e) **Mineral Products** and (f) **Construction**.

The scheme of classification used for the collection of data on the manufacturing industries of Canada provides for a grouping of producing concerns according to the principal component material of the major products made. For example, makers of leather goods are classified under "Animal Products"; the pulp and paper industry, under "Wood and Paper," etc.

In order that students of the Bureau reports on manufactures may have a true conception of the plan followed, an outline of the scheme of classification in use is given below:

### *Classification of Manufacturing Industries in Canada for the Collection of Production Statistics*

#### *Manufactures of:*

- (1) **Vegetable Products**, including—Coffee and Spices; Cocoa and Chocolate; Preserved and Canned Products; Pickles, Vinegar and Cider; Flour and Cereals; Bread and other Bakery Products; Macaroni and Vermicelli; Distilled and Brewed Liquors and Wines; Rubber Products; Starch and Glucose; Sugar; Tobacco Products; Linseed Oil and Oil Cake.
- (2) **Animal Products**, including—Fish and Fish Products; Dairy Factory Products; Meat and Meat Products; Leather and Leather Products; Furs and Fur Products.
- (3) **Textiles and Textile Products**, including—Cotton Textiles (Cloth, Yarn, Thread and Waste); Woollen Textiles (Cloth, Yarn, Blankets, Felt and Waste); Silk Products; Factory-made Clothing; Carpets, Rugs and Mats; Cordage, Rope and Twine.
- (4) **Wood and Paper**, including—Pulp and Paper Mill Products; Paper Goods, Printing, Publishing and Lithographing; Saw and Planing Mill Products; Furniture; Carriages, Wagons and Sleighs; Wooden Containers; Woodenware; Turned Wood Products; and the Output of Similar Wood-using Industries.
- (5) **Iron and Steel and their Products**, including—Pig Iron and Ferro-Alloys; Steel and Rolled Products; Castings and Forgings; Boilers and Engines; Agricultural Implements; Industrial Machinery; Office and Household Machinery; Automobiles; Auto Accessories; Bicycles; Railway Rolling Stock; Heating and Ventilating Equipment; Wire and Wire Goods; Sheet Metal Products; Hardware and Tools; Miscellaneous Iron and Steel Products.
- (6) **Manufactures of Non-Ferrous Metal Products**, including—Aluminium Products; Brass and Copper Products; Lead, Tin and Zinc Products; Manufactures of Precious Metals; Electrical Apparatus and Supplies; Miscellaneous Non-Ferrous Metal Products.
- (7) **Manufactures of Non-Metallic Mineral Products**, including—Aerated Waters; Asbestos and Allied Products; Cement Products and Sand-Lime Brick; Coke and By-Products; Gas, Illuminating and Fuel; Glass (blown, cut, ornamental, etc.); Monumental and Ornamental Stone; Petroleum Products; Miscellaneous Manufactured Non-Metallic Mineral Products, including (a) Artificial Abrasives; (b) Abrasive Products (c) Electrodes; (d) Fuel Briquettes; (e) Gypsum Products; (f) Mica Trimming.
- (8) **Chemicals and Allied Products**, including—Coal Tar and its Products; Acids, Alkalies, Salts and Compressed Gases; Explosives, Ammunition, Fireworks and Matches; Fertilizers; Medicinal and Pharmaceutical Preparations; Paints, Pigments and Varnishes; Soaps, Perfumes, Cosmetics and Toilet Preparations; Inks, Dyes, and Colour Compounds; Wood Distillates and Extracts.
- (9) **Miscellaneous Products**, including—Brooms and Brushes; Electric Light and Power; Musical Instruments, etc.

## PREFACE

Statistical reports on the mineral production of Canada issued by the Dominion Bureau of Statistics include the following publications: (a) Preliminary estimate of production issued on January 1 in each year; (b) Preliminary Report for the calendar year, printed in February; (c) Report on Production during the six months ending June 30, distributed in August; (d) Press Releases giving finally revised production data for the calendar year on each mineral product, issued as the compilations are completed; (e) Annual Report of the Mineral Production of Canada, available towards the close of the year. Monthly reports on Coal Statistics are also issued on the fifteenth of each month, and a special annual report giving detailed information on the Canadian coal mining industry and on the importation and distribution of coal, is published in June.

The final data for 1923 given in this report show that the mineral production of Canada in that year had a total value of \$214,079,331. It may be noted that the total value shown in the Preliminary Report for 1923, issued February 25, 1924, was \$214,019,832, only a fraction of one per cent below the final totals.

Annual statistical reports on the mineral production of Canada have been published for many years, first by the Geological Survey, later by the Mines Branch of the Department of Mines, and, since 1921, by the Dominion Bureau of Statistics. The present report is issued in continuance of this series, certain new material having been introduced which it is believed will be found of value to the mineral industry.

The statistics relating to the different minerals and the general statistical tables have been prepared as formerly, and these have been supplemented by general reviews of the principal mineral industries, (e.g., the copper-gold industry, the silver-lead-zinc industry, the nickel-copper industry, etc.), and a section on metallurgical works. In recent years, the value of statistics of this character, covering capital, labour, equipment, etc., has become more generally recognized and the demand for such information has greatly increased.

A new feature included in this report is the survey of the market in Canada for mine and mill materials. Information of this character is being collected by the Bureau whenever opportunity is afforded; the data now on file have been found of value in answering inquiries.

To meet a demand for the names and addresses of concerns operating in the mineral industry, a list has been prepared and is included in this report; this departure from previous practice, adopted in 1922, will, it is hoped, be found of value.

The cordial thanks of the Bureau are tendered to the Dominion Department of Mines and to the several Provincial Departments of Mines, which have without exception assisted materially in the preparation of the report. In reference to the co-ordination of mining statistics between the Provincial Departments and this Bureau, it has been found possible to arrange for the co-operative collection of monthly statistics of coal production with all the provinces in which such records are obtained, namely, Nova Scotia, New Brunswick, Saskatchewan and Alberta. In the field of general mining statistics, co-operative arrangements with the Ontario Department of Mines have been continued, thus preventing overlapping and duplication of work. All data collected by the Bureau on mining statistics are made available to the Dominion Department of Mines.

The thanks of the Bureau are also tendered to the mine and smelter operators, for assistance given and information made available. The railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data the receipt of which is gratefully acknowledged.

The report has been prepared under the direction of Mr. S. J. Cook, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch of the Bureau. Mr. A. C. Young, B.Sc., directly supervised the work and prepared the tables on metals and metalliferous ores. Mr. B. R. Hayden compiled the data on non-metalliferous products.

R. H. COATS,  
Dominion Statistician.

DOMINION BUREAU OF STATISTICS, OTTAWA,  
December 6, 1924.

## ERRATA

1. P. 48, Table 63—  
In the total line, for \$125,229,309 read 125,229,299.
2. P. 52, Table 67—  
Ontario column, value for 1921, for \$19,203 read \$190,203.
3. P. 67, Table 90—  
Ontario column, total value, for \$218,824,238 read \$218,824,288.
4. P. 78, Table 108—  
Total value, for \$29,760 read \$29,740.
5. P. 101, Table 151—  
Total tons, for 20,110 read 20,810.
6. P. 103, Table 154—  
Value of "petroleum, products of, n.o.p." in 1922 for \$298,815 read \$289,815.
7. P. 116, Table 180—  
Total value, for \$19,653,987 read \$18,653,987.
8. P. 128, Table 208—  
Total value of limestone, for \$47,333,651, read \$47,353,651.
9. P. 203, Table 334—
  - (a) Salary item 1923, Clerks, Stenographers, and Salesman, Canada, for \$35,514 read \$35,774.
  - (b) Ontario salary total in 1923, for \$57,907 read \$57,007.
  - (c) Same line, Canada total, for \$170,068 read \$170,328.
  - (d) Canada total for wages in 1923, for \$1,021,348 read \$1,021,088.

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Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1922 and 1923

		1922			1923		
		Quantity	Value	Per cent of total	Quantity	Value	Per cent of total
<b>METALLIC</b>			\$			\$	
Arsenic.....	Lb.				6,421,587	626,815	0.29
Chromite.....	Tons				3,558	52,650	0.03
Cobalt, metallic and contained in oxide	Lb.			1.00	888,061	2,530,974	1.18
Copper.....		589,960	1,852,370	3.11	86,881,537	12,529,186	5.85
Gold.....	Fine oz.	42,879,815	5,738,177	14.17	1,233,341	25,495,421	11.92
Iron pig, from Canadian ore.....	Tons	1,263,364	26,116,050	0.09	20,739	432,298	0.20
Iron ore sold for export.....		8,095	178,980		5,670	20,279	0.01
Lead.....	Lb.	1,781	4,938	3.15	111,234,466	7,985,522	3.73
Manganese.....	Tons	93,307,171	5,817,702		200	1,400	
Nickel.....	Lb.	17,597,123	6,158,993	3.34	62,453,843	18,332,077	8.56
Palladium.....	Crude oz.	724	47,060	0.02	1,732	138,560	0.06
Platinum.....		469	45,783	0.02	1,217	141,826	0.07
Rhodium, Osmium, Iridium.....		392	31,360	0.01	304	45,000	0.02
Silver.....	Fine oz.	18,646,439	12,576,758	6.82	18,601,744	12,067,509	5.64
Zinc.....	Lb.	56,290,000	3,217,536	1.74	60,416,240	3,991,701	1.86
<b>Total.....</b>			<b>61,785,707</b>	<b>33.50</b>		<b>84,391,218</b>	<b>39.42</b>
<b>NON-METALLIC</b>							
Actinolite.....	Tons	50	575		53	583	
Arsenic.....	"	2,576	321,037	0.17			
Asbestos.....	"	163,706	5,552,723	3.01	231,482	7,522,506	3.51
Barytes.....	"	289	9,537		409	8,548	
Chromite.....	"	767	11,503	0.06			
Coal.....	"	15,157,431	65,518,497	35.55	16,990,571	72,058,986	33.66
Feldspar.....	"	27,727	248,402	0.13	29,225	237,601	0.11
Fluorspar.....	"	4,503	102,138	0.05	139	1,732	
Garnets.....	"				1,250	100,000	0.05
Graphite.....	"	597	31,353	0.01	1,113	67,873	0.03
Grindstones.....	"	1,005	43,742	0.02	2,014	80,083	0.04
Gypsum.....	"	559,265	2,160,898	1.17	578,301	2,243,100	1.05
Magnesite.....	"	2,849	76,294	0.04	4,801	134,382	0.06
Magnesium sulphate.....	"	1,021	24,017	0.01	121	6,580	
Manganese.....	"	73	2,044				
Mica.....	"	3,349	152,263	0.08	3,525	326,974	0.15
Mineral water.....	Gal.	221,433	14,220		232,451	16,455	
Natro-alunite.....	Tons	50	2,500		15	750	
Natural gas.....	M cu. ft.	14,682,651	5,846,501	3.17	15,960,583	5,884,618	2.75
Oxides, iron.....	Tons	7,285	110,608	0.06	10,424	129,636	0.06
Peat.....	"	3,000	14,500				
Petroleum, crude.....	Bbl.	179,068	611,176	0.33	170,169	522,018	0.24
Phosphate.....	Tons	190	1,796		30	600	
Pyrites.....	"	18,143	74,303		28,591	113,020	0.05
Quartz.....	"	109,947	208,598	0.11	264,076	599,250	0.28
Salt.....	"	181,794	1,628,323	0.88	202,397	1,713,516	0.80
Sodium carbonate.....	"	202	3,027		265	3,975	
Sodium sulphate.....	"	504	11,980		733	10,189	
Talc and soapstone.....	"	13,195	188,458	0.10	10,366	150,507	0.07
Tripolite.....	"	219	5,781		130	3,250	
<b>Total.....</b>			<b>82,976,794</b>	<b>45.00</b>		<b>91,936,732</b>	<b>42.95</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>							
Cement, portland and puzzolan.....	Bbl.	6,943,972	15,438,481	8.38	7,543,589	15,064,661	7.04
Clay products—							
Brick, common.....	No.	294,919,113	4,714,658	2.56	250,564,527	3,884,474	1.81
Brick, pressed.....	"	90,577,826	1,839,549	0.99	73,400,274	1,461,483	0.68
Brick, moulded and ornamental.....	"	41,851,765	865,664	0.47	64,682,454	1,355,360	0.63
Brick, paving.....	"	150,813	5,972				
Firebrick.....	"	6,705,127	251,776	0.14	6,122,055	295,037	0.14
Fireclay.....	Tons	10,196	55,185	0.02	2,685	24,158	0.01
Fireclay blocks and shapes.....	"		67,588	0.04		81,345	0.04
Fireproofing.....	"		542,611	0.29		379,805	0.18
Hollow building brick or blocks.....	No.	4,892,504	448,674	0.24	7,720,476	620,329	0.29
Kaolin.....	Tons	1,197	17,866		163	2,369	
Pottery.....	"		266,391	0.14		229,547	0.11
Sewer-pipe.....	Tons	75,932	1,766,347	0.96	70,252	1,616,324	0.76
Terra-cotta and tile other than drain	"		188,789	0.10		209,471	0.10
Tile, drain.....	No.	14,730,963	407,386	0.22	10,598,891	323,314	0.15
Line.....	Bush.	8,972,971	3,165,005	1.72	10,035,319	3,266,608	1.53
Sand and gravel.....	Tons	11,666,374	3,502,935	1.90	12,752,515	3,016,518	1.41
Slate.....	"	1,899	14,871		1,836	17,289	
Stone—							
Granite.....	Tons	457,925	1,486,250	0.81	398,432	1,159,303	0.54
Limestone.....	"	3,152,124	4,175,941	2.27	3,687,663	4,475,921	2.09
Marble.....	"	1,912	231,894	0.13	2,473	201,518	0.09
Sandstone.....	"	25,221	80,908	0.04	22,766	66,547	0.03
<b>Total.....</b>			<b>39,534,741</b>	<b>21.50</b>		<b>37,751,381</b>	<b>17.63</b>
<b>Grand total.....</b>			<b>184,297,242</b>	<b>100.00</b>		<b>214,079,331</b>	<b>100.00</b>

Table 2.—Increase or Decrease in Quantities and Values of Mineral Products from Canadian Sources, in 1923 as compared with 1922

		Increase (+) or Decrease (-)		Increase (+) or Decrease (-)	
		Quantity	%	Value	%
				\$	
<b>METALLIC</b>					
Arsenic.....	Lb.	+ 1,269,587	+ 24.6	+ 305,778	+ 95.2
Chromite.....	Tons	+ 2,791	+ 364.0	+ 41,147	+ 357.0
Cobalt, metallic and contained in oxide.....	Lb.	+ 318,101	+ 55.8	+ 678,604	+ 36.6
Copper.....	Fine oz.	+ 44,001,719	+ 102.6	+ 6,791,009	+ 118.4
Gold.....	"	- 30,023	- 2.4	- 620,629	- 2.4
Iron pig from Canadian ore.....	Tons	+ 12,644	+ 156.1	+ 253,318	+ 141.5
Iron ore sold for export.....	"	+ 3,889	+ 218.3	+ 15,341	+ 310.6
Lead.....	Lb.	+ 17,927,295	+ 19.2	+ 2,167,820	+ 37.2
Manganese.....	Tons	- 127	- 174.0	- 644	- 3.5
Nickel.....	Lb.	+ 44,856,720	+ 254.9	+ 12,173,084	+ 197.6
Palladium.....	Crude oz.	+ 1,008	+ 139.2	+ 91,500	+ 194.4
Platinum.....	"	+ 748	+ 159.4	+ 96,043	+ 209.7
Rhodium, Osmium, Iridium.....	"	- 88	- 22.5	+ 13,640	+ 43.4
Silver.....	Fine oz.	- 24,695	- 0.2	- 509,249	- 4.1
Zinc.....	Lb.	+ 4,126,240	+ 7.3	+ 774,165	+ 24.0
<b>Total.....</b>				<b>+22,605,511</b>	<b>+ 36.4</b>
<b>NON-METALLIC</b>					
Actinolite.....	Tons	+ 3	+ 6.0	+ 8	+ 1.3
Asbestos.....	"	+ 67,776	+ 41.4	+ 1,969,783	+ 35.4
Barytes.....	"	- 129	- 41.5	- 989	- 10.3
Coal.....	"	+ 1,833,140	+ 12.0	+ 6,540,489	+ 9.9
Feldspar.....	"	+ 1,498	+ 5.4	+ 10,801	+ 4.3
Fluorspar.....	"	+ 4,364	+ 96.9	+ 100,406	+ 83.3
Graphite.....	"	+ 516	+ 86.4	+ 36,520	+ 116.4
Grindstones.....	"	+ 1,009	+ 100.3	+ 36,341	+ 83.0
Gypsum.....	"	+ 19,036	+ 3.4	+ 82,202	+ 3.8
Magnesite.....	"	+ 1,952	+ 68.5	+ 58,088	+ 76.1
Magnesium sulphate.....	"	+ 900	+ 88.1	+ 17,437	+ 72.6
Mica.....	"	+ 176	+ 5.2	+ 174,711	+ 114.7
Mineral water.....	Gal.	+ 11,018	+ 4.9	+ 2,235	+ 15.7
Natro-alunite.....	Tons	- 35	- 70.0	- 1,750	- 70.0
Natural gas.....	M cu. ft.	+ 1,277,932	+ 8.7	+ 38,117	+ 0.6
Oxides, iron.....	"	+ 3,139	+ 43.0	+ 19,028	+ 17.2
Peat.....	"	- 3,000	-	- 14,500	-
Petroleum, crude.....	Bbl.	- 8,899	- 4.9	- 89,158	- 14.5
Phosphate.....	Tons	+ 160	+ 84.2	+ 1,196	+ 66.5
Pyrites.....	"	+ 10,448	+ 57.5	+ 38,717	+ 52.1
Quartz.....	"	+ 154,129	+ 140.1	+ 390,652	+ 187.2
Salt.....	"	+ 20,603	+ 11.3	+ 85,193	+ 5.2
Sodium carbonate.....	"	+ 63	+ 31.1	+ 948	+ 31.3
Sodium sulphate.....	"	+ 229	+ 45.4	+ 1,791	+ 14.9
Talc.....	"	+ 2,829	+ 21.4	+ 37,951	+ 20.1
Tripolite.....	"	- 89	- 40.6	- 2,531	- 43.7
<b>Total.....</b>				<b>+ 8,959,938</b>	<b>+ 10.8</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>					
Cement, portland and puzzolan.....	Bbl.	+ 599,617	+ 8.6	+ 373,820	+ 2.4
Clay products—					
Brick, common.....	No.	- 44,354,586	- 15.0	- 830,184	- 17.6
Brick, pressed.....	"	- 17,177,552	- 18.9	- 378,066	- 20.5
Brick, moulded and ornamental.....	"	+ 22,830,689	+ 54.5	+ 489,696	+ 56.5
Brick paving.....	"	- 150,813	-	- 5,972	-
Firebrick.....	"	- 583,073	- 8.6	+ 43,261	+ 17.1
Fireclay.....	Tons	- 7,511	- 73.6	+ 31,027	+ 56.2
Fireclay blocks and shapes.....	"	-	-	+ 13,757	+ 20.3
Fireproofing.....	"	-	-	+ 162,806	+ 30.0
Hollow building brick or blocks.....	No.	+ 2,827,972	+ 57.8	+ 171,655	+ 38.2
Kaolin.....	Tons	+ 1,034	+ 86.3	+ 15,497	+ 86.7
Pottery.....	"	-	-	+ 36,844	+ 13.8
Sewer pipe.....	Tons	- 5,680	- 7.4	+ 150,023	+ 8.4
Terra-cotta and tile other than drain.....	"	-	-	+ 20,682	+ 10.9
Tile, drain.....	No.	- 4,132,072	- 28.0	+ 84,072	+ 20.6
Lim.....	Bush.	+ 1,062,348	+ 11.8	+ 101,603	+ 3.2
Sand and gravel.....	Tons	+ 1,066,141	+ 9.3	+ 486,417	+ 13.8
Slate.....	Tons	- 63	- 3.3	- 2,418	- 16.2
Stone—					
Granite.....	Tons	- 59,493	- 12.9	- 326,947	- 21.9
Limestone.....	"	+ 535,539	+ 16.9	+ 299,980	+ 7.1
Marble.....	"	+ 561	+ 29.3	+ 30,376	+ 13.0
Sandstone.....	"	- 2,455	- 9.7	- 14,361	- 17.7
<b>Total.....</b>				<b>- 1,783,360</b>	<b>- 4.5</b>
<b>Grand total.....</b>				<b>+29,782,089</b>	<b>+ 16.2</b>

# DOMINION BUREAU OF STATISTICS

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## ANNUAL REPORT

OF THE

# MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR, 1923

**General Review.**—Progress, with the establishment of several new production records, marked the mineral production of Canada during 1923, when the value of the output advanced 16·2 per cent to a total of \$214,079,331 as compared with \$184,297,242 in 1922 and the record value \$227,859,665 attained in 1920. Commodity prices, which rose quickly during and after the war to a peak in 1920, have declined somewhat since then, but the war-time inflation must be borne in mind when production is computed in terms of values only.

New output records were established in 1923 for coal, lead, zinc, asbestos and for the value of cobalt. Copper production, while considerably below war-time records, was more than double the tonnage produced in 1922. The output of nickel in 1923 was nearly four times greater than in the preceding year. Gold was only slightly below the total for 1922. The production of silver was higher in 1923, although owing to special adjustments made in 1922 to take account of silver made but not sold, the tables show a larger figure for silver in that year than in the year under review.

Considered by groups and compared with corresponding data for 1922, metals showed an advance of 36·5 per cent to a total value of \$84,391,218; coal reached a new annual record both in tonnage and value at 16,990,571 short tons valued at \$72,058,986 at the pit; production of the other non-metals, except structural materials and clay products, had a value of \$19,877,746 as against \$17,458,297 in the preceding year, while structural materials and clay products, including portland cement, contributed \$37,751,381 to the total. The value of Canada's mineral output in 1923 was made up as follows: metals, 39·42 per cent; non-metals, including coal, 42·95 per cent; structural materials and clay products, 17·63 per cent.

With the exception of Prince Edward Island, every province in Canada showed some mineral production during 1923; Ontario led the list with a total of \$80,825,851; British Columbia came next with \$43,757,388; Alberta's coal mines put that province in the third position, with a total mineral output valued at \$31,287,536; Nova Scotia followed with a total of \$29,648,893; and Quebec held next place, producing a mineral output worth \$20,308,763; Yukon Territory, \$2,972,823, and New Brunswick, \$2,462,457 were next in order; and Manitoba, \$1,768,037, and Saskatchewan, \$1,047,583 completed the list.

In Ontario, Canada's principal mineral-producing province, the mining industry covers a very wide field. Here are produced, gold, silver, nickel and copper, most of the world's cobalt, some lead and iron, and small quantities of platinum and its related metals; natural gas, salt, gypsum, quartz, crude petroleum, feldspar, talc, mica, garnets and pyrites, among the non-metals; clay products, portland cement, building stone, sand and gravel and lime, in the more general group of structural materials and clay products.

British Columbia's claim to distinction in the mineral field is based on the outputs over a long period of years of coal, copper, lead, gold, silver and zinc; other minerals produced in less amounts include cement, sand and gravel, lime, building stone, clay products, quartz, pyrites, fluorspar and gypsum, and, in recent years, sodium carbonate and magnesium sulphate.

Alberta's chief mineral product is coal, but the list also includes natural gas, clay products, lime, crude petroleum, cement, and sand and gravel.

Nova Scotia, fourth in importance as a mineral-producing province, has had a long and interesting history in the annals of mining. The production of coal is the most outstanding feature, but gypsum, arsenic, gold, building stone, salt and several other mineral products are also found.

Metal mining in Quebec is of less importance than the production of the non-metallic minerals but the metallic list includes lead, zinc, silver, gold and chromite. Asbestos is the most outstanding non-metallic mineral, and the production of this commodity from the mines in the eastern townships represents about 85 per cent of the world's production. Feldspar, mica and phosphate are well-known Quebec minerals. Other non-metallic minerals produced are magnesite, iron oxides, quartz, talc, and among the structural materials there are cement, clay products, lime, kaolin, slate, building stone, sand and gravel.

The Yukon, famed as a gold producer, still yields gold, silver and a little lead. A small tonnage of coal, too, is mined annually.

New Brunswick minerals are non-metallics exclusively. Coal is the principal product. Other mineral products obtained in this province are grindstones, gypsum, petroleum, natural gas, clay products, lime, stone, sand and gravel.

Manitoba and Saskatchewan are primarily agricultural provinces, but the annual production of minerals in each of these provinces is valued usually between one and two million dollars. Coal and sodium sulphate are found in Saskatchewan; gypsum, lime, stone, portland cement, and at times copper, gold, and silver are obtained in Manitoba; clay products, sand and gravel are produced in both provinces.

Mention has been made of the inflation in prices during and immediately after the war, and in the study of production records, shown in terms of money values, the trend in prices must be taken into consideration. The Internal Trade Branch of the Bureau has developed a commodity price index based on the prices prevailing in 1913; prices in that year are represented by the figure 100, and the index for subsequent years is expressed as a percentage of the prices prevailing in 1913. Several methods of grouping items have been adopted so that index numbers for many different groups of commodities are available as well as a general index based on the prices of all commodities entering into the compilation. The index for non-ferrous metals in 1923 stood at 95.5 in January, reached the maximum for the year of 102.5 in March and April and then gradually receded to 95.1 in December. That is to say, the average prices of non-ferrous metals in Canada during 1923 were almost identical with the prices prevailing for these commodities in 1913. Non-metallic minerals on the other hand showed an average of approximately 83.8 per cent in excess of the 1913 average. The non-metallic group includes such materials as coal, brick, lime, cement, glass, petroleum, pottery, sulphur and salt. Iron and its products showed a greater fluctuation than either of the two preceding groups, and ranged from 158.9 in January to a maximum of 174.4 in June, from which it receded to 168.7 in December. The monthly index number for articles of mineral origin, raw or partly manufactured varied from 163.3 in January to a maximum for the year of 169.1 in April, and during the rest of the year dropped down gradually to 161.7 in December. Fully or chiefly manufactured articles of mineral origin showed somewhat less variation, but the index stood approximately ten points lower at 151.3 in January, 154.7 in April, and 150.0 in December. The general index for all commodities stood at 151.4 in January, rose to a maximum of 156.9 in April and gradually declined to 153.5 in December. The average for the year was 153.0. In other words, in 1923 it took on the average \$1.53 to purchase commodities that could have been bought for \$1.00 in 1913.

Canada's mineral industry has had a long and creditable production record. The value of the output per capita has risen from \$2.23 in 1886 to a maximum of \$26.40 in 1920 and the value of the products has advanced in the same time from 10 million dollars to more than 227 million dollars. Compared with the other primary industries on the basis of total production values, mining in Canada held third place in 1920; agriculture and forestry, respectively, claimed first and second position.

In the Canadian mineral industry, between six and seven thousand properties are operated annually, giving employment to upwards of 60,000 workers, and paying out 75 million dollars a year in salaries and wages. During 1923, seventeen mineral products reached a production value of one million dollars or over in Canada, in order of total values these were coal, gold, nickel, cement, copper, silver, clay products, lead, asbestos, natural gas, stone, zinc, lime, sand and gravel, cobalt, gypsum and salt. Production values of these commodities ranged from \$72,-058,986 for coal to \$1,713,516 for salt. In the aggregate these 17 products accounted for 98 per cent of the total recorded value of the mineral production of Canada.

In reviewing these commodities it seems desirable to consider the metals first, then the non-metals, and finally the structural materials and clay products.

While the output of gold at 1,233,341 fine ounces valued at \$25,495,421 was somewhat lower than in 1922, when 1,263,364 ounces was produced having a value of \$26,116,050, the production in 1923 was only exceeded by the output in 1922 and by the record established in 1900 when 1,350,057 ounces was produced at a value of \$27,908,153.

Since 1914, Ontario has become by far the largest producer of gold in Canada. This remarkable increase has been brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The decline in production during 1917 and 1918 was due to the abnormal conditions created by the war. There was a marked recovery in 1919 and this developed in the following years to a maximum in 1922. Power shortage in northern Ontario during the earlier months of 1923 seriously interfered with production, but the provision of adequate power facilities later in the year definitely removed the possibility of further power shortage.

The depression in the markets for nickel and copper caused by the discontinuance of the demand for these metals as war material, apparently came to an end early in 1923, and the renewal of activities by the International Nickel Company and by the British America Nickel Corporation resulted in a production of nickel amounting to 62,453,843 pounds valued at \$18-, 332,077 or more than three times as much as was produced during the preceding calendar year when the total output was only 17,597,123 pounds valued at \$6,158,993.

Copper production showed a total of 86,881,537 pounds valued at \$12,529,186 as compared with 42,879,818 pounds valued at \$5,738,177 in 1922.

Returns from the silver producers showed about a million ounces greater production of this metal in Canada during 1923 than in the preceding year, though as noted above the adjustments made due to a change in method of reporting production increased the total reported in the tables for 1922 above that for 1923.

Most of the increased production occurred in Ontario, and so offset the decline in the average price of silver that the total value of the output for the year was really considerably higher than in 1922. The adjustments made in 1922, however, on which the figures in the tables are based, make it appear that the reverse of the foregoing is true.

New Canadian records for lead production have been set up in each of the past three years. In 1923, the output amounted to 111,234,466 pounds valued at \$7,985,522, an advance of 17.9 million pounds in quantity and 2.1 million dollars in value above the corresponding figures for the preceding year. By far the greater part of the production was from the Trail Smelter of the Consolidated Mining and Smelting Company, but the production in Ontario by the Kingdon Mining, Smelting and Manufacturing Company at Galetta, and the output from the Yukon Territory were also appreciably greater than in previous years.

Zinc production during the year was valued at \$3,991,701 as compared with \$3,217,536 in 1922. The quantity produced was 60,416,240 pounds, an increase of 4.1 million pounds or 7.3 per cent over the output in the previous year. Both in quantity and value, the 1923 production of zinc was considerably greater than in any previous year. The importance of this statement is enhanced by a comparison of the average price prevailing for this metal; in 1913, zinc sold for 13.23 cents on the St. Louis market while during 1923, the average price was 6.607 cents. The production was largely from the smelter operated by the Consolidated Mining and Smelting Company at Trail, B.C.

For statistical and comparative purposes it has always been customary to compute the value of the cobalt contained in cobalt products made during the year in terms of the refined metal content, valued at the average price prevailing on the New York market. On this basis, the production of cobalt in 1923 was 888,061 pounds valued at \$2,530,974, an increase of 55.8 per cent in quantity and 36.6 per cent in value above the totals for the preceding year.

The five principal non-metallic minerals mentioned among the leading minerals were coal, asbestos, natural gas, gypsum and salt.

In the matter of coal supply, Canada was much better off in 1923 than in many other years. Although Canada possesses about 16 per cent of the world's known coal reserves, the largest deposits occur in the western provinces, and the other coal beds underlie the maritime provinces, while the principal demand for fuel comes from the more thickly populated industrial areas in central Canada.

During 1923, Canada produced 16.9 million tons of coal, exported 1.6 million tons, imported 22.1 million tons from the United States and 0.5 million tons from Great Britain; the supply made available during the year was therefore 38.0 million tons. The 1923 output of coal from Canadian mines was 0.2 per cent higher than any previous record. In 1922, when the output was 15.1 million tons, the quantity exported amounted to 1.8 million tons, imports totalled 14.2 million tons, and the total amount made available for consumption was 27.5 million tons.

Following the decline in production noted in 1921 and part of 1922, the asbestos output from the eastern townships mines in the provinces of Quebec showed considerable improvement and set up a new Canadian record at 231,482 tons valued at \$7,522,506 as compared with 163,706 tons valued at \$5,552,723 in 1922. While 1923 was then the banner year for production in the asbestos industry, the decline in the average price of the asbestos produced kept the total value below the high record of \$14,792,201 established in 1920 when the production amounted to only 199,575 tons.

The natural gas industry in Canada, established many years ago, has been one of the important contributors to mineral production, particularly in Ontario, Alberta and New Brunswick. During 1923, approximately 15,960,583 thousand cubic feet was produced and sold for \$5,884,618. In recent years the supply of natural gas in Ontario has not been so plentiful as previously, and the Ontario Government through the appointment of a special commissioner has taken measures to conserve supply for industrial and domestic uses.

Sales of gypsum valued at \$2,243,100 showed an increase of 3.8 per cent over the total for the preceding year; each of the four producing provinces showed approximately the same tonnage sold as in 1922.

The production of salt does not vary greatly from year to year, but the output in 1923 which amounted to 202,397 tons worth \$1,713,516 showed an increase of 20,603 tons or 11.3 per cent in quantity and an advance of \$85,193 or 5.2 per cent in value above the totals for 1922.

Structural materials mentioned among the seventeen principal mineral products were cement, clay products, stone, lime, and sand and gravel.

More Portland cement was manufactured in 1923 than in the preceding year, but the price recession which went into effect January 1, 1923 cut down the total receipts from sales to \$15,064,661 as compared with \$15,438,481 in 1922. The increase in production amounted to 8.6 per cent and the decline in the total value of sales was 2.4 per cent.

Clay products produced in Canada during 1923 had a total sales value of \$10,483,016 as compared with \$11,438,456 in 1922 and \$8,857,818 in 1921. Production included common, pressed, moulded and ornamental building brick, hollow-building brick or blocks, drain tile and sewer pipe, pottery, architectural terra-cotta, kaolin or china clay, fireclay, fire brick, fireclay blocks and shapes. The principal producing provinces were Ontario and Quebec, which together accounted for a production value of 8.7 million dollars; every province contributed some production in this field.

Building stone both rough and dressed, monumental and ornamental stone were all produced in considerable amounts during 1923. The kinds of stone quarried in Canada were granite (traprock, syenite and other igneous rock), limestone, sandstone and marble. The principal kind produced was limestone; of this, more than 3.6 million tons was quarried having a value of 4.47 million dollars. More than 1.15 million dollars' worth of granite also was sold. The total production of all grades was valued at \$5,903,289 as compared with \$5,974,993 in 1922.

The production of lime in 1923 showed a further improvement and rose 11.8 per cent in quantity and 3.2 per cent in value above the totals for 1922 which were in turn higher than those for 1921.

Owing to the widely distributed deposits of sand and gravel in Canada, a great many beds were operated during 1923 and the production included sands for building purposes, for foundry uses, for the manufacture of glass, and also, very largely, for the ballasting of railroad beds and for repairs to existing lines. The total production was valued at \$3,016,518, or somewhat less than the total for 1922 which was \$3,502,935. The production however was 9.3 per cent higher than in the preceding year, although the value of the output showed a drop of 13.8 per cent.

In general, it may be said that greater tonnages, but lower unit prices, characterized the mineral production for the year. The return toward normal in the matter of unit values has been an encouraging factor in the promotion of production.

The whole outlook at the close of the year was brighter and the prospects for further improvement seemed to be definitely assured. Stabilization in other avenues of commerce has had a steadying effect on the mineral industry. The discovery of new mining fields, the education of the public regarding the importance of the mining industry, the promotion of investments in dependable projects, and the encouragement of mining through wise legislation are the principal factors required to build up Canada's mineral industry and to maintain and augment production of minerals for domestic needs, and for the development of a healthy export trade.

**Table 3.—Exchange Table showing the amount paid in Canadian dollars for one United States dollar by months, 1920-1923**

Month	1920	1921	1922	1923
	\$	\$	\$	\$
January.....	1·1056	1·1437	1·0553	1·0067
February.....	1·1427	1·1362	1·0351	1·0119
March.....	1·1178	1·1337	1·0297	1·0208
April.....	1·1112	1·1216	1·0208	1·0203
May.....	1·1134	1·1164	1·0125	1·0222
June.....	1·1381	1·1294	1·0138	1·0231
July.....	1·1134	1·1328	1·0091	1·0263
August.....	1·1275	1·1168	1·0023	1·0244
September.....	1·1075	1·1106	·9998	1·0233
October.....	1·1016	1·0931	1·0011	1·0156
November.....	1·2131	1·0904	·9998	1·0181
December.....	1·1643	1·0687	·9966	1·0239
<b>Average for the year.....</b>	<b>1·1227</b>	<b>1·1161</b>	<b>1·0145</b>	<b>1·0197</b>

Table 4.—Metal Prices

Commodity	Market	Unit	1919	1920	1921	1922	1923
			\$	\$	\$	\$	\$
Antimony (ordinaries).....	New York.....	Pound....	0-08190	0-08490	0-04957	0-05471	0-07897
Arsenic, white.....	".....	".....	0-10	0-11	0-08850	0-08500	0-12050
Cobalt.....	".....	".....	2-50	2-50	3-00	3-25	2-85
Cobalt oxide.....	".....	".....	1-65	—	—	2-00	2-10
Copper.....	".....	".....	0-18691	0-17456	0-12502	0-13382	0-14421
Lead.....	New York.....	".....	0-05759	0-07957	0-04545	0-05734	0-07267
".....	Montreal*.....	".....	0-06966	0-08940	0-05742	0-06219	0-07179
Nickel.....	New York*.....	".....	0-45	0-45	0-35	0-35	0-29353
Platinum.....	".....	Ounce.....	114-61	110-9	75-033	97-618	116-537
Silver.....	".....	".....	1-11122	1-009	0-62654	0-67528	0-64873
Tin.....	".....	Pound....	0-63328	0-48273	0-28576	0-31831	0-41799
Zinc.....	St. Louis*.....	".....	0-06988	0-07671	0-04655	0-05716	0-06607

\*Quotations used in this report in computing value of mineral production.

Table 5.—Prices of Non-Metallic Minerals and Structural Materials, 1919-1923, showing the average returns received by producers, f.o.b. shipping points in Canada as computed from the total receipts and total shipments for the year

Commodity	Unit	1919	1920	1921	1922	1923
NON-METALLIC		\$	\$	\$	\$	\$
Actinolite.....	Ton.....	11-00	11-60	12-50	11-50	11-00
Asbestos.....	".....	68-93	74-12	52-89	33-92	32-50
Barytes.....	".....	17-42	30-60	35-43	33-00	20-89
Chromite.....	".....	26-80	22-82	19-90	15-00	.....
Coal.....	".....	3-99	4-86	4-81	4-32	4-24
Corundum.....	".....	.....	125-24	138-87	.....	.....
Feldspar.....	".....	5-87	7-42	7-73	8-96	8-13
Fluorspar.....	".....	19-32	21-40	24-69	22-68	12-46
Graphite.....	".....	73-69	75-62	70-29	52-52	60-98
Grindstones.....	".....	29-96	36-06	50-00	43-52	39-76
Gypsum.....	".....	4-06	4-41	4-62	3-86	3-87
Magnesite.....	".....	29-14	27-90	21-80	26-78	27-99
Magnesium sulphate.....	".....	12-35	20-49	19-47	23-52	54-38
Manganese.....	".....	21-42	16-99	50-00	28-00	.....
Mica.....	".....	99-41	170-69	99-80	45-46	92-75
Mineral water.....	Gal.....	.....	.....	0-07	0-06	0-07
Natro-alunite.....	Ton.....	.....	.....	50-00	50-00	50-00
Natural gas.....	M. cu. ft.....	0-21	0-25	0-33	0-40	0-36
Oxides, iron.....	Ton.....	9-56	8-26	10-34	15-18	12-43
Peat.....	".....	6-65	4-10	4-00	4-83	.....
Petroleum, crude.....	Bbl.....	3-06	4-19	3-42	3-41	3-06
Phosphate.....	Ton.....	13-79	.....	15-00	9-45	20-00
Pyrites.....	".....	2-96	4-12	3-48	4-10	3-95
Quartz.....	".....	5-55	3-65	3-12	1-90	2-26
Salt.....	".....	9-43	7-36	10-16	8-96	8-46
Sodium sulphate.....	".....	.....	24-04	30-25	23-76	13-90
Talc.....	".....	6-24	7-70	14-28	14-28	14-51
Tripolite.....	".....	20-00	33-08	33-00	26-39	25-00
STRUCTURAL MATERIALS AND CLAY PRODUCTS						
Cement, portland and puzzolan.....	Bbl.....	1-96	2-22	2-47	2-22	2-00
Clay products.....						
Brick, common.....	M.....	13-21	15-94	16-18	15-99	15-50
Brick, pressed.....	".....	17-52	23-54	21-47	20-31	19-91
Brick, hollow building.....	".....	38-65	.....	48-88	91-72	80-35
Brick, moulded and ornamental.....	".....	27-95	21-03	25-35	20-68	20-95
Firebrick.....	".....	.....	.....	53-85	37-55	48-19
Fireclay.....	Ton.....	.....	.....	10-18	5-41	9-00
Fireproofing and hollow porous blocks.....	".....	8-34	12-05	.....	.....	.....
Kaolin.....	".....	13-11	22-00	15-23	14-02	14-53
Paving brick.....	M.....	.....	.....	.....	39-81	.....
Sewer-pipe.....	Ton.....	17-10	26-31	.....	23-26	23-01
Tile, drain.....	M.....	30-71	38-73	.....	27-65	30-50
Lime.....	Bush.....	0-32	0-41	0-40	0-35	0-33
Sand and gravel.....	Ton.....	0-26	0-37	0-22	0-30	0-24
Stone—						
Granite.....	Ton.....	.....	.....	2-94	3-24	2-91
Limestone.....	".....	.....	.....	1-55	1-32	1-21
Marble.....	".....	.....	.....	104-67	121-28	81-49
Sandstone.....	".....	.....	.....	2-75	3-20	2-92

Table 6.—Annual Values of the Mineral Production in Canada since 1886

Year	Value of production	Value per capita	MINERAL PRODUCTION OF CANADA (PER CAPITA)	
	\$	\$		
1886.....	10,221,255	2.23		
1887.....	10,321,331	2.23		
1888.....	12,518,894	2.67		
1889.....	14,013,113	2.96		
1890.....	16,763,353	3.50		
1891.....	18,976,616	3.92		
1892.....	16,623,415	3.39		
1893.....	20,035,082	4.04		
1894.....	19,931,158	3.98		
1895.....	20,505,917	4.05		
1896.....	22,474,256	4.38		
1897.....	28,485,023	5.49		
1898.....	38,412,431	7.32		
1899.....	49,234,005	9.27		
1900.....	64,420,877	12.04		
1901.....	65,797,911	12.16		
1902.....	63,231,836	11.36		
1903.....	61,740,513	10.83		
1904.....	60,082,771	10.27		
1905.....	69,078,999	11.49		
1906.....	79,286,697	12.81		
1907.....	86,865,202	13.75		
1908.....	85,557,101	13.16		
1909.....	91,831,441	13.70		
1910.....	106,823,623	14.93		
1911.....	103,220,994	14.32		
1912.....	135,048,296	18.33		
1913.....	145,634,812	19.35		
1914.....	128,863,075	16.75		
1915.....	137,109,171	17.44		
1916.....	177,201,534	22.05		
1917.....	189,646,821	23.18		
1918.....	211,301,897	25.37		
1919.....	176,686,390	20.84		
1920.....	227,859,665	26.40		
1921.....	171,923,342	19.56		
1922.....	184,297,242	20.55		
1923.....	214,079,331	23.41		

Table 7.—Annual Values of Metallic and Non-Metallic Mineral Production of Canada since 1907

Year	Metallic	Non-Metallic		Total
		Fuels and other non- metallics	Structural materials and clay products	
	\$	\$	\$	\$
1907.....	42,426,607	31,275,546	12,863,049	(a) 86,865,202
1908.....	41,774,362	32,142,784	11,339,955	(a) 85,557,101
1909.....	44,156,841	31,141,251	16,533,349	91,831,441
1910.....	49,438,873	37,757,158	19,627,592	106,823,623
1911.....	46,105,423	34,405,960	22,709,611	103,220,994
1912.....	61,172,753	45,080,674	28,794,869	135,048,296
1913.....	66,361,351	48,463,709	30,809,752	145,634,812
1914.....	59,386,619	43,467,229	26,009,227	128,863,075
1915.....	75,814,841	43,373,571	17,920,759	137,109,171
1916.....	106,319,365	53,414,983	17,467,186	177,201,534
1917.....	106,455,147	63,354,363	19,837,311	189,646,821
1918.....	114,549,152	77,621,946	19,130,799	211,301,897
1919.....	73,262,793	76,002,087	27,421,510	176,686,390
1920.....	77,939,630	108,027,947	41,892,088	227,859,665
1921.....	49,343,232	87,842,682	34,737,428	171,923,342
1922.....	61,785,707	82,976,794	39,534,741	184,297,242
1923.....	84,391,218	91,936,732	37,751,381	214,079,331

(a) Total includes \$300,000 allowed for products not reported.

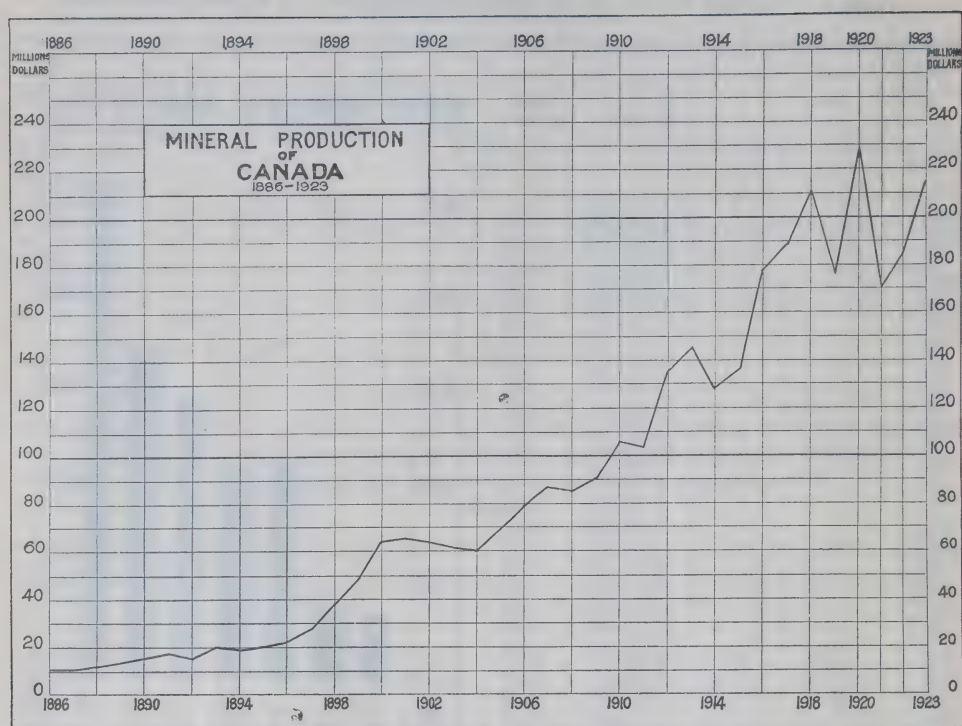


Table 8.—Values of the Mineral Production of Canada by Provinces, 1899-1923

Year	Nova Scotia*	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Yukon	British Columbia
	\$	\$	\$	\$		\$			\$
1899.....	6,817,274	420,227	2,585,635	9,819,557		17,108,707			12,482,605
1900.....	9,298,479	439,060	3,292,383	11,258,099		23,452,330			16,680,526
1901.....	7,770,159	467,985	3,759,984	13,970,010		19,297,940			20,531,833
1902.....	10,686,549	607,129	3,743,636	14,619,091		16,127,400			17,448,031
1903.....	11,431,914	580,495	3,585,938	14,160,033		14,082,986			17,899,147
1904.....	11,212,746	559,913	3,688,482	12,582,843		12,713,613			19,325,174
1905.....	11,507,047	559,035	4,405,975	18,833,292		11,387,642			22,386,008
1906.....	12,894,303	646,328	5,242,058	25,111,682		10,092,726			25,299,600
1907.....	14,532,040	664,467	6,205,553	30,381,638	898,775	533,251	4,657,524	3,335,898	25,656,056
1908.....	14,487,108	579,816	6,372,949	30,623,812	584,374	413,212	5,122,505	3,669,290	23,704,035
1909.....	12,504,810	657,035	7,086,265	37,374,577	1,193,377	456,246	6,047,447	4,032,678	22,479,006
1910.....	14,195,730	581,942	8,270,136	43,538,078	1,500,359	498,122	8,996,210	4,704,474	24,478,572
1911.....	15,409,397	612,830	9,304,717	42,796,162	1,791,772	636,706	6,662,673	4,707,432	21,299,305
1912.....	18,922,236	771,004	11,656,998	51,985,876	2,463,074	1,165,642	12,073,589	5,933,242	30,076,635
1913.....	19,376,183	1,102,613	13,475,534	59,167,749	2,214,496	881,142	15,054,046	6,276,737	28,086,312
1914.....	17,584,639	1,014,570	11,836,929	53,034,677	2,413,489	712,313	12,634,234	5,418,185	24,164,039
1915.....	18,088,342	903,467	11,619,275	61,071,287	1,318,387	451,933	9,909,347	5,057,708	28,689,425
1916.....	20,042,262	1,118,187	14,406,598	80,461,323	1,823,576	590,473	13,297,543	5,491,610	39,969,962
1917.....	21,104,542	1,435,024	17,400,077	89,066,600	2,628,264	860,651	16,527,535	4,482,202	36,141,926
1918.....	22,317,108	2,144,017	19,605,347	94,694,093	3,120,600	1,019,781	23,109,987	2,355,631	42,935,333
1919.....	23,445,215	1,770,945	21,267,947	67,917,998	2,868,378	1,521,964	21,087,582	1,940,934	34,865,427
1920.....	34,130,017	2,491,787	28,886,214	81,715,808	4,223,461	1,837,468	33,586,456	1,576,726	39,411,728
1921.....	28,912,111	1,901,505	15,157,094	57,356,651	1,934,117	1,114,220	30,562,229	1,754,955	33,230,460
1922.....	25,923,499	2,263,692	17,647,939	65,866,029	2,258,942	1,255,470	27,872,136	1,785,573	39,423,962
1923.....	29,648,893	2,462,457	20,308,763	80,825,851	1,768,037	1,047,583	31,287,536	2,972,823	43,757,388

\*Includes a small production from Prince Edward Island.

Table 9.—Percentage of the Total Value of the Mineral Production of Canada produced by each Province, 1919-1923

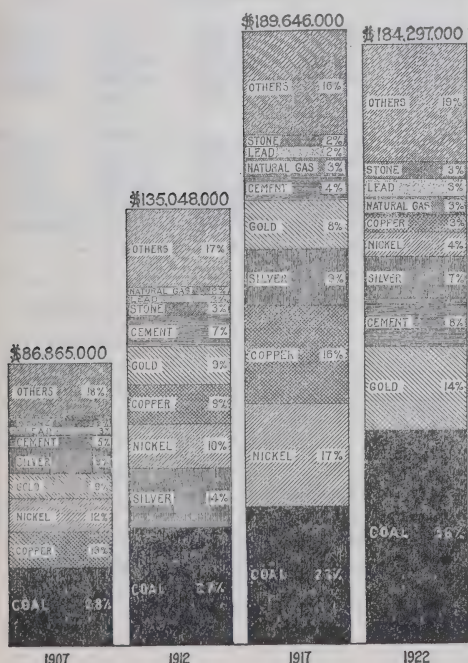
Province	1919	1920	1921	1922	1923
Nova Scotia.....	13.27	14.98	16.82	14.12	13.85
New Brunswick.....	1.00	1.09	1.10	1.23	1.15
Quebec.....	12.04	12.68	8.82	9.57	9.49
Ontario.....	38.44	35.86	33.36	35.74	37.76
Manitoba.....	1.62	1.85	1.12	1.23	0.83
Saskatchewan.....	0.86	0.81	0.65	0.67	0.49
Alberta.....	11.94	14.74	17.78	15.13	14.60
British Columbia.....	19.73	17.30	19.33	21.39	20.44
Yukon.....	1.10	0.69	1.02	0.92	1.39
<b>Canada.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Table 10.—Values by Classes of Products of the Mineral Production of Canada, by Provinces, 1923

Province	Metallic	Non-Metallic	Structural Materials and Clay Products	Total
	\$	\$	\$	\$
Nova Scotia.....	17,206	28,973,067	658,620	29,648,893
New Brunswick.....		1,995,339	467,118	2,462,457
Quebec.....	149,567	8,191,190	11,968,006	20,308,763
Ontario.....	54,027,922	7,901,876	18,896,053	80,825,851
Manitoba.....	644	386,614	1,380,779	1,768,037
Saskatchewan.....		868,637	178,946	1,047,583
Alberta.....		29,718,776	1,568,760	31,287,536
British Columbia.....	27,224,541	13,899,748	2,633,099	43,757,388
Yukon Territory.....	2,971,338	1,485		2,972,823
<b>Canada.....</b>	<b>84,391,218</b>	<b>91,936,732</b>	<b>37,751,381</b>	<b>214,079,331</b>

MINERAL PRODUCTION OF CANADA  
1907-1922

PRODUCTION BY KINDS



PRODUCTION BY PROVINCES

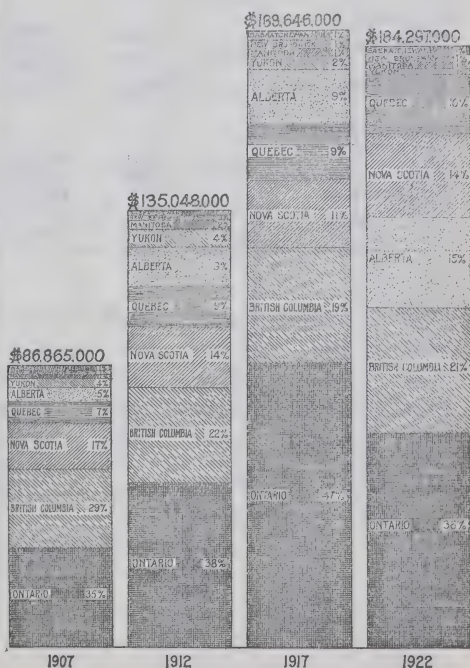


Table 11.—Mineral Production of Nova Scotia, 1921, 1922 and 1923

	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>METALLIC—</b>		\$		\$		\$
Arsenic.....Lb.					45,000	2,250
Gold.....Fine oz.	*465	9,091	*1,128	21,598	680	13,556
Manganese.....Tons	68	3,400	73	2,044	200	1,400
<b>NON-METALLIC—</b>						
Barytes.....Tons	270	9,567	289	9,537	209	4,368
Coal....."	5,734,928	27,782,050	5,569,072	24,629,921	6,597,838	28,170,458
Feldspar....."	16	117				
Grindstones....."	183	6,990	102	3,692	256	7,906
Gypsum....."	206,831	511,883	332,404	580,148	341,705	747,934
Salt....."	2,638	23,269	5,053	54,666	4,480	39,151
Tripolite....."	341	11,268	219	5,781	130	3,250
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Clay Products.....		361,761		431,618		413,974
Lime.....Bush	25,914	6,085			42,370	7,199
Stone.....Tons	58,923	116,602	87,955	119,492	138,682	177,090
Other products.....	†	70,028	†	65,002	†	60,357
<b>Total.....</b>		<b>28,912,111</b>		<b>25,923,499</b>		<b>29,648,893</b>

\*Includes 25 oz. silver, value \$16 in 1921, and 86 ounces silver, value \$58 in 1922.

†Includes railway ballast from P.E.I., \$1,433, in 1921; \$10,028 in 1922, and \$4,429 in 1923.

Table 12.—Mineral Production of New Brunswick, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>NON-METALLIC—</b>		\$		\$		\$
Coal.....Tons	187,192	920,666	287,513	1,107,643	276,617	1,196,772
Grindstones....."	1,098	57,077	903	40,050	1,758	72,177
Gypsum....."	54,030	360,220	82,462	517,668	104,740	564,680
Natural gas.....M cu. ft.	708,743	139,375	753,898	148,040	640,300	126,068
Petroleum.....Bbl.	7,479	33,022	7,778	32,732	8,826	35,642
<b>STRUCTURAL MATERIALS—</b>						
Clay products.....		66,600		75,425		62,587
Lime.....Bush	562,447	203,084	560,834	187,895	329,548	143,814
Stone.....Tons	15,125	97,290	12,027	104,730	22,448	166,083
Sand and gravel....."	239,192	24,171	448,322	49,509	608,528	94,634
<b>Total.....</b>		<b>1,901,505</b>		<b>2,263,692</b>		<b>2,462,457</b>

Table 13.—Mineral Production\* of Quebec, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Chromite.....Tons					3,558	52,650
Copper.....Lb.	352,308	44,045				
Gold.....Oz.	635	13,127			667	13,788
Iron ore, sold for export.....Tons			526	1,410	69	186
Lead.....Lb.	595,881	34,215			520,041	37,334
Molybdenite.....“						
Silver.....Oz.	38,084	23,861			33,006	21,412
Zinc.....Lb.					366,240	24,197
<b>NON-METALLIC—</b>						
Asbestos.....Tons	92,761	4,906,230	163,706	5,552,723	231,476	7,519,906
Chromite.....“	2,798	55,696	767	11,503 ⊕		
Feldspar.....“	9,737	80,180	12,472	127,826	12,026	102,779
Graphite.....“	38	2,423	24	1,500	45	2,316
Magnesite.....“	2,927	74,109	2,849	76,294	4,801	134,382
Mica.....“	484	41,172	1,360	97,748	1,545	216,684
Mineral water.....Gal.	19,626	7,278	12,161	3,692	5,421	2,408
Iron oxides.....Tons	8,879	92,765	7,282	110,488	9,911	123,186
Phosphate.....“	30	450	131	1,320	30	600
Pyrites.....“	1,986	10,463				
Quartz.....“	5,994	29,824	10,994	53,023	13,376	68,936
Talc.....“			150	4,950	590	19,993
<b>STRUCTURAL MATERIALS—</b>						
Cement.....Bbl.	2,135,631	5,410,275	2,660,935	5,907,300	3,173,993	6,347,986
Clay products.....		1,742,872		2,476,370		2,437,229
Kaolin.....Tons	124	1,888	1,197	17,866	163	2,369
<b>Lime—</b>						
Quicklime.....Bush.	1,940,594	754,375	2,108,513	634,157	2,198,071	576,731
Hydrated lime.....Tons	3,495	36,128	5,278	55,642	5,595	57,482
Slate.....“	(b)	22,325	1,899	14,871	1,836	17,289
Stone.....“	719,499	1,662,641	987,355	2,342,316	1,094,816	2,322,745
Sand and gravel.....“	700,669	110,752	905,101	156,940	1,055,817	206,175
<b>Total.....</b>		<b>15,157,094</b>		<b>17,647,939</b>		<b>20,308,763</b>

\*There is also in this Province an important production of aluminium from imported ores.

⊕Included in Metallics 1923.

(b) 415 squares and 2,232 tons crushed material.

Table 14.—Mineral Production of Ontario, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>METALLIC—</b>		\$		\$		\$
Arsenic, white.....Lb.					5,153,617	532,785
Cobalt.....“	251,986	755,958	569,960	1,852,370	888,061	2,530,974
Copper.....“	12,821,385	1,602,930	10,943,636	1,464,477	31,656,800	4,565,227
Gold.....Oz.	708,213	14,640,062	1,000,340	20,678,862	971,704	20,086,904
Iron ore, sold for export.....Tons	48	242			5,358	18,873
Iron, pig, from Canadian ore (a)....“	56,564	1,873,682	8,095	178,980	20,739	432,298
Lead.....Lb.	3,312,493	190,203	2,890,397	180,216	4,401,494	315,983
Nickel.....“	19,293,060	6,752,571	17,597,123	6,158,993	62,453,843	19,332,077
Platinum.....Oz.	269	20,184	458	44,709	1,210	141,010
Palladium.....“	591	38,267	724	47,060	1,732	138,560
Rhodium, ruthenium, osmium, iridium “	57	9,690	391	31,280	*304	45,000
Silver.....Oz.	9,761,607	6,116,037	10,811,903	7,300,305	10,540,943	6,838,226
Zinc.....Lb.						
<b>NON-METALLIC—</b>						
Actinolite.....Tons	78	975	50	575	53	583
Arsenious oxide.....“	1,491	233,763	2,058	299,940		
Asbestos.....“					6	2,600
Barytes.....“					200	4,180
Corundum.....“	403	55,965				
Feldspar.....“	20,115	150,457	15,255	120,576	17,199	134,822
Fluorspar.....“	116	1,744	284	3,905	64	597
Garnet.....“					1,250	100,000
Graphite.....“	899	63,439	573	29,853	1,068	65,557
Gypsum.....“	84,790	433,053	110,227	621,668	99,958	542,317
Mica.....“	218	28,891	1,989	54,515	1,980	110,290
Mineral water.....Imp. gal.	308,647	14,438	209,072	10,528	227,030	14,047
Natural gas.....M. cu. ft.	8,422,774	3,080,130	8,060,114	4,076,296	8,128,413	4,066,244
Peat.....Tons	1,666	6,664	3,000	14,500		
Petroleum.....Bbl.	172,859	559,198	164,732	526,316	159,400	478,149
Phosphate.....Tons			59	476		
Pyrites...“	27,785	101,306	11,233	39,763	25,134	99,716
Quartz.....“	72,068	220,806	81,528	118,054	225,110	483,285
Salt.....“	161,937	1,649,626	176,741	1,573,657	197,917	1,674,365
Talc.....“	9,967	140,390	12,854	178,728	9,531	125,124
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Cement.....Bbl.	2,723,071	6,424,356	3,104,386	6,393,566	3,296,428	5,855,589
Clay products.....		5,183,125		6,944,218		6,270,615
<b>Lime—</b>						
Quicklime.....Bush.	2,763,062	962,439	3,939,954	1,311,563	4,810,421	1,373,823
Hydrated.....Tons	26,862	381,749	36,408	455,980	41,727	519,840
Stone.....Tons	2,716,080	4,167,582	2,317,265	2,960,926	2,638,984	2,869,228
Sand and gravel.....“	6,273,173	1,496,729	6,285,123	2,184,174	8,146,433	2,006,958
<b>Total.....</b>		<b>57,356,651</b>		<b>65,866,029</b>		<b>80,825,851</b>

(a) The total production of blast-furnace pig-iron in Ontario in 1921 was 494,901 tons valued at \$11,856,352. In 1922, it was 293,662 tons valued at \$6,493,513, and in 1923 it was 674,428 tons valued at \$15,995,496.

\*Rhodium and iridium

**Table 15.—Sales and Shipments from the Mineral Industries of Ontario, 1923.**  
(Quantities shown are final shipments during the year; values given are those reported as received, f.o.b. shipping point, by the shippers.)

Metal Mining Industries	Quantity	Marketed value as reported
		\$
<b>SILVER COBALT INDUSTRY—</b>		
Sold by South Ontario smelters—		
Silver bullion..... Oz.	3,093,060	2,004,180
Arsenic*..... Lb.	5,158,617	582,785
Cobalt oxide..... "	454,772	879,529
Cobalt metal..... "	227,993	576,879
Other Cobalt Salts..... "	71,093	62,019
Nickel oxide..... "	71,484	9,246
Nickel metal.... "	33,593	10,075
Nickel sulphate..... "		
Mixed oxides..... "	226,328	189,910
Copper sulphate..... "		
Arsenate of iron..... Tons		
Matte.....		76,642
Residues exported..... Tons	248	99,023
Sold direct from Ontario silver mines—		
Silver bullion..... Oz.	6,018,259	3,928,311
Ores, concentrates and residues exported..... Tons	1,481	443,819
Total for Silver-Cobalt Industry.....		8,862,418
<b>NICKEL-COPPER INDUSTRY—</b>		
Matte exported..... Tons	21,450	5,645,305
Refined nickel..... Lb.		
Nickel oxides..... "	43,471,124	7,935,962
Converter copper..... "		
Precious metals..... Oz.	58,297	340,935
Total for Nickel-Copper Industry.....		13,922,202
<b>GOLD MINING INDUSTRY—</b>		
Crude bullion..... Oz.	1,214,964	20,143,938
Exchange premium.....		280,119
Slags exported..... Tons	52	22,403
Total for Gold-Mining Industry.....		20,446,460
<b>LEAD MINING AND SMELTING INDUSTRY—</b>		
Lead bullion..... Lb.	5,154,312	340,724
<b>IRON MINING AND SMELTING INDUSTRY—</b>		
Pig iron from Ontario ores..... Tons	20,739	432,298
<b>Totals—</b>		
(a) Metal Mining and Smelting Industries.....		44,004,102
(b) Non-Metallic Mineral Industries, as per Table 14.....		7,901,876
(c) Structural Materials and Clay Products Industries, as per Table 14.....		18,896,053
<b>Grand Total of Sales.....</b>		<b>70,802,031</b>

Table 16.—Mineral Production of Manitoba, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Copper..... Lb.						
Gold..... Oz.	207	4,279	156	3,225	31	641
Silver..... "	33	20	20	14	5	3
<b>Non-METALLIC—</b>						
Gypsum..... Tons	40,859	480,282	34,072	440,914	31,575	386,554
Natural gas..... M cu. ft.	200	60	200	60	200	60
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Clay products.....		208,982		210,740		160,134
Lime..... Bush.	413,283	136,375	525,184	163,799	524,128	161,226
Stone..... Tons	16,868	56,666	34,359	106,638	51,304	118,277
Other products*.....		1,047,453		1,333,552		941,142
<b>Total.....</b>		<b>1,934,117</b>		<b>2,258,942</b>		<b>1,768,037</b>

\*Includes cement and sand and gravel.

Table 17.—Mineral Production of Saskatchewan, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>Non-METALLIC—</b>						
Coal..... Tons	335,632	823,180	382,437	802,053	438,100	858,448
Magnesium sulphate..... "	2	120				
Salt..... "	33	790				
Sodium sulphate..... "	623	18,850	504	11,980	733	10,189
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Clay products.....		166,244		134,704		119,405
Sand and gravel..... Tons		105,036	924,944	306,733	438,319	59,541
<b>Total.....</b>		<b>1,114,220</b>		<b>1,255,470</b>		<b>1,047,583</b>

Table 18.—Mineral Production of Alberta, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Gold, alluvial..... Oz.	49	1,013				
<b>Non-METALLIC—</b>						
Coal..... Tons	5,909,217	27,246,514	5,990,911	24,351,913	6,854,397	28,018,303
Natural gas..... M cu. ft.	4,945,884	1,374,599	5,867,459	1,622,105	7,191,670	1,692,246
Petroleum..... Bbl.	7,203	49,313	5,608	52,128	1,943	8,227
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Clay products.....		710,477		700,063		590,565
Lime..... Bush.	107,083	48,332	130,627	71,328	87,753	37,999
Stone..... Tons	2,962	13,750	554	7,300		
Other products*.....		1,118,231		1,067,299		940,196
<b>Total.....</b>		<b>30,562,229</b>		<b>27,872,136</b>		<b>31,287,536</b>

\*Includes cement and sand and gravel.

Table 19.—Mineral Production of British Columbia, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Arsenic..... Lb.					1,217,970	41,780
Copper (a)..... " 34,447,127		4,306,580	31,936,182	4,273,700	55,224,737	7,963,959
Gold..... Oz. 150,792		3,117,147	207,370	4,286,718	200,140	4,137,261
Iron ore sold for export..... Tons 1,010		3,030	1,255	3,528	243	1,215
Lead..... Lb. 60,298,603		3,462,346	87,093,266	5,430,265	99,541,818	7,146,107
Platinum..... Oz. 23		1,726	12	1,154	7	816
Silver..... " 3,350,357		2,099,133	7,150,937	4,828,384	6,113,327	3,965,899
Zinc..... Lb. 53,089,356		2,471,310	56,290,000	3,217,536	60,050,000	3,967,504
<b>NON-METALLIC—</b>						
Arsenic..... Tons			518	21,097	⊕	
Coal..... " 2,890,291		15,676,774	2,927,033	14,622,317	2,823,306	13,813,520
Fluorspar..... " 5,403		134,523	4,219	98,233	75	1,135
Gypsum..... " 40		100	100	500	323	1,615
Magnesium sulphate..... " 2,027		39,386	1,021	24,017	121	6,580
Magnesite..... " 803		7,211				
Natro-alunite..... " 30		1,500	50	2,500	15	750
Oxides (iron)..... " 169		845	3	120	513	6,450
Pyrites..... " 3,597		4,557	6,908	34,540	3,457	13,304
Quartz..... " 22,288		62,317	17,425	37,521	25,590	47,029
Sodium carbonate..... " 197		14,775	202	3,027	265	3,975
Talc..... " 157		4,175	191	4,780	245	5,390
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Clay products.....		415,869		447,452		426,138
Lime—						
Quicklime..... Bush. 152,998		234,779	433,716	254,320	564,971	338,443
Hydrated..... Tons 1,622		17,851	2,909	30,321	4,410	50,051
Stone..... " 142,041		229,165	197,670	324,591	165,100	249,866
Other products (b).....		925,361		1,477,341		1,568,601
<b>Total.....</b>		<b>33,230,460</b>		<b>39,423,962</b>		<b>43,757,388</b>

(a) Smelter recoveries of copper. (b) Includes cement and sand and gravel. ⊕ Included in metallics in 1923.

Table 20.—Mineral Production of Yukon, 1921, 1922 and 1923

Product	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Gold..... Oz. 65,994		1,364,217	54,456	1,125,705	60,144	1,243,287
Silver..... " 393,092		246,288	663,493	447,997	1,914,438	1,241,953
Lead..... Lb. 2,472,615		141,978	3,323,508	207,221	6,771,113	486,098
<b>NON-METALLIC—</b>						
Coal..... Tons 233		2,472	465	4,650	313	1,485
<b>Total.....</b>		<b>1,754,955</b>		<b>1,785,573</b>		<b>2,972,823</b>

## METALLICS

## ALUMINIUM

Although aluminium was economically produced in the United States as far back as 1890 the production in Canada dates only from about the year 1903, when the Northern Aluminium Company developed its plant at Shawinigan Falls, Quebec. No commercial ores of aluminium have as yet been found in Canada and the consumers are dependent entirely upon imported ores or metals. The bulk of the ore consumed is drawn from the United States, but quantities are also imported from France; it is used in the manufacture of artificial abrasives as well as a source of aluminium.

Since there is but one firm engaged in the manufacture of aluminium in Canada, statistics of production as reported to the Bureau may not be separately shown. The manufacture of aluminium cooking utensils has, however, been considerably developed during the past few years, and there are now some eight companies engaged in the industry. A separate report by this Bureau is now available on this section of the trade.

Aluminium is reduced from its ores by electrical smelting in which small quantities of the mineral cryolite (imported from Greenland), are used. The resulting ingots are remelted and moulded into slabs, which after being rolled into plates form the raw product of the kitchen utensil trade. The uses for the metal are rapidly extending and it now enters into the production of power cables, especially in long spans where a light weight is desirable; in the manufacture of automobile bodies, cream separators, the frame work of airships, chemical vats, in the production of steel, where it is important in eliminating blowholes in castings and as mentioned above for cooking utensils.

The price of ingot aluminium on the New York market averaged 25·98 cents per pound for 1923, or 7·3 cents above the average for the preceding year. The quotations were however much below those for August 1920 when 32·21 cents was quoted.

Table 21.—Monthly Average Prices of Ingot Aluminium

(at New York in cents per pound)

Month	1921	1922	1923
January.....	27·00	17·74	23·00
February.....	28·00	17·33	23·37
March.....	28·00	17·52	25·12
April.....	28·00	18·07	27·00
May.....	28·00	17·92	27·00
June.....	28·00	17·87	27·00
July.....	26·40	17·87	26·50
August.....	24·50	17·87	26·50
September.....	24·50	18·26	26·30
October.....	24·50	20·32	26·50
November.....	24·50	20·87	26·50
December.....	20·00	22·52	27·00
Average.....	25·95	18·68	25·98

Table 22.—Imports of Alumina and Aluminium into Canada and Exports of Aluminium during 1921, 1922 and 1923

	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Alumina.....	30,049,100	638,483	42,617,700	938,181	131,773,700	2,190,091
Aluminium—						
Ingots, blooms, bars.....	724,434	213,136	1,199,718	251,435	756,981	194,357
Tubing.....	15,846	8,291	34,157	16,594	73,103	30,770
Manufactures.....		258,885		315,317		468,518
Leaf foil.....		97,332		215,944		151,023
Household and hollow-ware.....		316,740		544,784		544,046
<b>Total.....</b>		<b>1,532,867</b>		<b>2,282,255</b>		<b>3,578,805</b>
<b>EXPORTS—</b>						
Aluminium—						
Ingots, bars, etc.....	5,399,800	1,259,703	9,614,200	1,637,147	17,585,400	3,380,198
Manufactures.....		273,401		451,587		797,635
<b>Total.....</b>		<b>1,533,104</b>		<b>2,088,734</b>		<b>4,177,833</b>

Table 23.—World's Production of Aluminium, 1913, 1919-1923

(From "The Mineral Industry, 1923")

(Short tons)

Country	1913	1919	1920	1921	1922	1923
Austria.....	5,510	5,511	2,204	2,204	4,408	4,408
Canada.....	6,519	16,530	11,020	6,612	9,918	18,183
France.....	14,880	13,444	13,224	11,020	13,224	13,224
Germany.....	882	16,530	11,020	11,020	13,224	14,326
Great Britain.....	11,020	11,020	8,816	5,510	10,469	9,918
Italy.....	963	1,844	1,364	820	694	1,653
Norway.....	2,755	4,408	5,510	4,408	6,612	15,428
Switzerland.....	11,020	16,530	13,224	11,020	13,224	13,224
United States.....	32,509	99,180	99,180	31,683	57,304	106,894
<b>Total.....</b>	<b>86,058</b>	<b>184,997</b>	<b>165,562</b>	<b>84,297</b>	<b>129,077</b>	<b>197,258</b>

Table 24.—World's Production of Bauxite, 1913, 1919-1924

(1913 from "The Mineral Industry, 1913"; 1919-1923 from "The Mineral Industry, 1923")

(Metric tons)

Country	1913	1919	1920	1921	1922	1923
Austria.....		(a)	362	2,638	4,095	2,734
British Guiana.....		2,008	31,883	20,011		112,168
British India.....	1,203	1,709	6,401	6,759	4,998 (b)	7,000
Dutch Guiana.....					18,805 (b)	20,000
France.....	309,285	159,103	266,716	95,318	139,176	314,330
Germany.....		9,393	13,420 (b)	2,000 (b)	12,000 (b)	6,000
Roumania.....					12,000 (b)	12,000
Italy.....	6,953	2,972	13,139	49,120	66,646	98,222
Jugo Slavia.....			27,860	10,021	31,290 (b)	50,000
Spain.....		1,780	540	184		
United Kingdom.....	8,417	9,369	11,197	2,305	5,953 (b)	4,000
United States.....	213,675	382,610	529,675	141,790	314,584	553,434
<b>Total.....</b>	<b>539,533</b>	<b>568,944</b>	<b>901,193</b>	<b>330,146</b>	<b>609,547</b>	<b>1,179,888</b>

(a) Figures not available. (b) Estimated.

## ANTIMONY

Until the year 1917 the production of small quantities of antimony, either as ore, or as a constituent in the residues from the lead refining at Trail was more or less consistent. Since that time no production has been reported. The producers of this metal are the Consolidated Mining and Smelting Company, Trail, B.C., and the Antimony Products Corporation, formerly the North American Smelting Corporation, Limited, Lake George, N.B. This latter company, which was re-organized early in 1922, did not resume operations during that year.

The imports of antimony and antimony salts in 1923 were 920,366 pounds, valued at \$62,786 as against 421,696 pounds, valued at \$26,001 in 1922. No exports of antimony ore or regulus have been reported for the past four years.

Table 25.—Production of Antimony in Canada, 1886-1923

Calendar Year	Antimony ore		Refined regulus	
	Tons	Value	Pounds	Value
		\$		\$
1886.....	665	31,490		
1887.....	584	10,860		
1888.....	345	3,696		
1889.....	55	1,100		
1890.....	26½	625		
1891.....	10	60		
1892-1897.....				
1898.....	1,344	20,000		
1899-1904.....				
1905 (a).....	527			
1906 (a).....	782			
1907.....	2,016	65,000	63,850	5,108
1908 (b).....	148	5,443		
1909.....	35	1,575	61,207	4,285
1910.....	364	13,906		
1911-1914.....				
1915.....	1,341	81,283	59,440	11,888
1916.....	885	94,537	107,185	41,823
1917.....	361	22,000		
1918-1923.....				

(a) As recorded by the Nova Scotia Department of Mines; no value given.

(b) Exports.

Table 26.—Monthly Average Prices of Antimony, 1921, 1922 and 1923

(Compiled from quotations given in the *Engineering and Mining Journal-Press*—"Ordinaries" stand for Hungarian, Chinese, or other "Foreign" brands)

(At New York in cents per pound)

Month	1921	1922	1923
	Ordinaries	Ordinaries	Ordinaries
January.....	5-26	4-463	6-884
February.....	5-25	4-416	7-290
March.....	5-28	4-319	8-885
April.....	5-14	4-980	8-380
May.....	5-25	5-467	7-477
June.....	5-09	5-145	6-839
July.....	4-74	5-091	7-097
August.....	4-60	5-315	7-753
September.....	4-56	6-580	7-633
October.....	5-09	6-905	8-005
November.....	4-73	6-594	9-156
December.....	4-50	6-382	9-365
<b>Average.....</b>	<b>4-96</b>	<b>5-471</b>	<b>7-897</b>

Table 27.—Imports into Canada of Antimony, 1921, 1922 and 1923

	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
IMPORTS—						
Antimony or regulus of.....	619,287	34,641	405,646	22,340	900,433	57,882
Antimony salts.....	21,291	5,486	16,050	3,661	19,883	4,904
<b>Total.....</b>	<b>640,578</b>	<b>40,127</b>	<b>421,696</b>	<b>26,001</b>	<b>920,366</b>	<b>62,786</b>

## ARSENIC

The production of arsenic ( $As_2O_3$ ) from Canadian ores during 1923 amounted to 6,421,587 pounds, having a reported selling value of \$626,815, as against 5,152,000 pounds valued at \$321,037 in the previous year. The record by provinces was as follows:—(a) Ontario, 5,153,617 pounds valued by the operators at \$582,785 and recovered in the smelting of the silver-cobalt arsenides of the Cobalt region; (b) British Columbia 1,217,970 pounds computed as  $As_2O_3$  contained in arsenical gold concentrates shipped to the Tacoma smelters, Washington, U.S.A., and (c) Nova Scotia, 45,000 pounds also computed as  $As_2O_3$  contained in the gold ore concentrates exported to Europe.

The corresponding figures for 1922 were (a) 4,116,000 pounds valued at \$299,940 and (b) 1,036,000 pounds valued at \$21,097. The strong demand for arsenic throughout the world during 1923, and the prevailing high price made it possible to ship old concentrates available in Nova Scotia.

Due to the heavy demand for insecticides to combat the boll-weevil in the cotton fields of the southern states the price of arsenic has risen to a very high point. It was quoted as low as 4 cents during the summer months but with the large volume of buying orders in September and October the price again advanced. The average price for 1923 was 12.05 cents as against an average of 8.5 cents during the previous year.

Heretofore, arsenic has been included among the non-metallic minerals in the tables of mineral production and while it is now included with the metals in this report, the same method of computing the value has been retained as in other years, i.e., selling values as reported by operators have been used and not the average price prevailing in any recognized market.

Arsenic is generally marketed in the form of white arsenious oxide ( $As_2O_3$ ) and is used principally in the manufacture of insecticides (paris green, calcium arsenate and lead arsenate); the glass and tanning industries also consume considerable quantities.

Table 28.—Production of Arsenic in Canada, 1885-1923

Year	White Arsenic		Year	Arsenic in Ore*		White Arsenic	
	Tons	Value		Tons	Value	Tons	Value
		\$			\$		\$
1855.....	440	17,600	1907.....	656	11,094	330	36,209
1886.....	120	5,460	1908.....	986	17,506	716	41,060
1887.....	30	1,200	1909.....	224	3,346	1,129	64,100
1888.....	30	1,200	1910.....	547	5,716	1,502	75,328
1889.....			1911.....			2,097	76,237
1890.....	25	1,500	1912.....			2,045	89,262
1891.....	20	1,000	1913.....			1,692	101,463
1892-3.....			1914.....			1,737	104,015
1894.....	7	420	1915.....			2,396	147,830
1895-8.....			1916.....			2,186	262,349
1899.....	57	4,872	1917.....	280	11,200	2,656	658,231
1900.....	303	22,725	1918.....	1,078	43,114	2,482	520,525
1901.....	695	41,676	1919.....	530	21,218	2,859	488,706
1902.....	800	48,000	1920.....	628	22,231	1,831	425,617
1903.....	257	15,420	1921.....			1,491	233,763
1904-5.....			1922.....	518	21,097	2,058	299,940
1906.....	201	14,058	1923.....	631	44,030	2,579	582,785
			<b>Total.....</b>	<b>6,078</b>	<b>200,552</b>	<b>34,771</b>	<b>4,382,551</b>

\*Computed as  $As_2O_3$ ; Net value as reported by the operators.

Table 29.—Production in Canada, Exports and Imports of Arsenic, ( $\text{As}_2\text{O}_3$ ), 1921, 1922 and 1923

	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
From arsenical concentrates exported Tons			518	21,097	631	44,030
White arsenic.....	1,491	233,763	2,058	299,940	2,579	582,785
<b>Total.....</b>	<b>1,491</b>	<b>233,763</b>	<b>2,576</b>	<b>321,037</b>	<b>3,210</b>	<b>626,815</b>
<b>EXPORTS—</b>						
Arsenic, metallic.....			222	5,238	587	25,003
Arsenic, n.o.p.....	767	108,535	1,367	198,005	1,564	348,646
<b>IMPORTS—</b>						
White arsenic.....Lb.	1,847	230	958,120	70,718	457,422	66,280
Sulphide of arsenic.....	185,685	26,348	8,294	1,066	7,339	1,244
Arseniate of soda.....	11,993	3,002	7,961	1,402	4,940	475

Table 30.—World's Production of Arsenic ( $\text{As}_2\text{O}_3$ ), 1913, 1919-1923

(From "The Mineral Industry, 1923")

(Metric tons)

Country	1913	1919	1920	1921	1922	1923
Belgium.....		50	463	485	1,008	
Canada (*).....	1,535	3,075	2,231	1,353	2,337	3,307
China (b).....	(c) 547	58	49	100	29	
France—White arsenic.....		735	606			
Ore.....	4,427	600	280	580	941	
Germany (d).....	1,892	1,475	2,077	2,000	2,000	
Ore.....	5,721	5,116	6,007	6,902	967	
Greece.....		685	854	768		
Japan.....	21	835	933	1,395	2,044	
Mexico.....		2,246	2,183	785		
Portugal.....	925	536	653	268	271	
Australia.....		59	310	224	407	620
Rhodesia (e).....		220	396	327	451	
Spain.....	47	42	76			
Union of South Africa.....		7	10	2	3	
United Kingdom—White arsenic.....	1,722	2,563	2,029	1,049	994	
Pyrites.....	36	76	1,197		360	
United States.....	2,280	5,469	10,434	4,342	9,096	12,947

(a) White arsenic except where noted otherwise. (b) Exports. (c) Arsenic trisulphide.

(d) Estimated arsenic in ore. (e) Ore.

(\*) Dominion Bureau of Statistics figures for production of Arsenic in Canada are given in Table 28 above.

## CHROMITE

After a year of idleness in chromite mining during 1922 there was mined, milled and concentrated in 1923, some 25,000 short tons of mill rock. The shipments which increased more than three times those of the previous year totalled 3,558 short tons of chromite concentrates averaging 48 per cent  $\text{Cr}_2\text{O}_3$  and valued at \$52,650. In 1922 the shipments were 767 tons valued at \$11,503.

In 1918, some shipments of chromite were made from the Mastadon claim in the Grand Forks Division, British Columbia, but since that date this property has not been operated.

The average price of chromite (50 per cent  $\text{Cr}_2\text{O}_3$ ) in the United States, as quoted in the "Engineering and Mining Journal-Press" was about \$22.50 per ton throughout 1922 and ranged from \$18.50 for Indian to the high level of \$28.00 for Rhodesian and New Caledonian in 1923.

Table 31.—Production of Chromite in Canada, 1886-1923.

Year	Short Tons	Value	Year	Short Tons	Value
		\$			\$
1886.....	60	945	1908.....	7,225	82,008
1887.....	38	570	1909.....	2,470	26,604
1888-93.....			1910.....	299	3,734
1894.....	1,000	20,000	1911.....	157	2,587
1895.....	3,177	41,300	1912-13.....		
1896.....	2,342	27,004	1914.....	136	1,210
1897.....	2,637	32,474	1915.....	(a) 12,341	179,543
1898.....	2,021	24,252	1916.....	(a) 27,517	311,460
1899.....	2,010	21,842	1917.....	(a) 36,725	499,682
1900.....	2,335	27,000	1918.....	21,994	867,122
1901.....	1,274	16,744	1919.....	8,541	228,898
1902.....	900	13,000	1920.....	11,016	251,379
1903.....	3,509	51,129	1921.....	2,798	55,696
1904.....	6,074	67,146	1922.....	767	11,503
1905.....	8,575	93,301	1923.....	3,558	52,650
1906.....	9,035	91,859			
1907.....	7,196	72,901	<b>Total.....</b>	<b>188,047</b>	<b>3,183,606</b>

(a) A portion of this ore was sold to a customs mill in the district and the final shipments of ores and concentrates in 1916 were 15,249 short tons valued at \$310,902 or an average of \$20.39 per ton; and in 1917, 23,713 tons valued at \$581,796 or an average of \$24.54 per ton.

Table 32.—Production in Canada, Imports and Exports of Chromite, 1921, 1922 and 1923

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
<b>PRODUCTION—</b>		\$		\$		\$
Quebec—Chromite.....	2,798	55,696	767	11,503	3,558	52,650
<b>IMPORTS—</b>						
Bichromate of soda.....	313	59,557	720	118,872	693	103,093
Bichromate of potash.....	32	9,070	48	10,283	44	9,770
<b>EXPORTS.....</b>	<b>2,387</b>	<b>32,747</b>	<b>773</b>	<b>8,286</b>	<b>3,750</b>	<b>64,890</b>

As the United States is the leading consumer of chromite in the world it will be of interest to quote a portion of the report prepared by H. M. Hoar <sup>(1)</sup> in the investigation of essential raw materials lately authorized by the Sixty-Seventh Congress.

"Chromite is of prime military importance as the prerequisite raw material for the manufacture of ferrochrome used in making chrome steel armour plate, projectiles, high-speed cutting tools, etc. It is furthermore an essential raw material in the chemical, dyestuff, paint and tanning industries, while chromite bricks are an important refractory material in metallurgical industries. Up to the present no substitute for chrome in the steel industry has been found, and in tanning there is nothing known which will produce similar results. With the requirements of these two industries, in which the United States ranks first, it will be readily realized that ample supplies at reasonable prices are an absolute necessity to meet international competition.

The principal producing country of chromium products such as ferrochrome and chrome chemicals is the United States. Prior to the war this country consumed more than one-third of the world's annual consumption of chromite. In 1913 the chromite used by the manufacturers of ferrochrome and chrome chemicals in the United States amounted to 65,000 tons. From the beginning of the war, however, consumption increased markedly until 1918, when 130,000 tons were necessary to fill requirements. The pre-war consumption of chromite in England was about 25,000 tons, while in France it approximated 35,000 tons. Germany is also an important producer of chromium products, consuming prior to 1914 about 30,000 tons annually. About 5,000 tons each filled the requirements of Russia and Austria. Russia's consumption was mainly in the manufacture of chrome chemicals, while Austria's consumption was principally for refractory purposes. With the anticipated industrial expansion, consequent upon a full return to normalcy, consumption in all countries, undoubtedly, will be greatly increased."

<sup>1</sup>Supplement to Commerce Reports, Trade Information Bulletin No. 252 Bureau of Foreign and Domestic Commerce, Washington, D.C.

Table 33—World's Production of Crude Chromite, 1913, and 1919-1923

(From The "Mineral Industry, 1919 and 1923.")

(Metric tons)

Country	1913	1919	1920	1921	1922	1923
Brazil.....		4,877	3,506			
Bosnia.....	305	500				
Canada.....		8,678	9,996	2,538	696	2,654
Cuba.....		14,693	721	610	1	10,587
Greece.....	6,342	4,164	12,492	5,919	9,927 (b)	10,600
Guatemala.....		1,686	1,122	401		
India.....	5,670	37,024	27,232	35,322	23,144	
Japan.....		6,012	3,967	3,368	3,756	
New Caledonia (a).....	63,370	23,548	91,536	29,458	10,718	23,226
Queensland.....			161			
Rhodesia.....	63,384	32,007	54,674	45,533	84,799	87,702
Russia.....			2,360	2,220	(b) 1,500	
Turkey.....	26,374	3,500	25,000	(b) 10,000	2,540	
United States.....	259	5,161	2,542	266	361	231

(a) Exports, (b) Estimated in part.

\*For Dominion Bureau of Statistics figures see Table 31.

**Prices.**—During 1923, quotations were given in the *Engineering and Mining Journal-Press* for three grades of chromite imported into the United States, and known as Indian, Rhodesian, and New Caledonian. The Indian chromite was of a lower grade than the others. On this material the price quoted (c.i.f.), Atlantic ports, ranged from \$18.50 per long ton in January to \$20 during the week of March 17th, at which level it remained steady until July 7th when it rose to \$21, the highest quotation for the year. This price was maintained until October when it fell to \$19.50. Nominal quotations only were obtainable for the balance of the year.

The New Caledonian and Rhodesian brands were highest in price at the opening of the year when \$26 per long ton was quoted. The price broke to \$24 and by April was given as \$20 to \$22 for either brand. During this month the New Caledonian variety was quoted separately at higher figures than the Rhodesian, the former being \$24 to \$26 and the latter \$19.25 to \$23. By November the quotations were \$24 and \$21.50 respectively and for the remainder of the year were given as nominal.

In previous reports on mineral production, chromite has been included among the non-metallic minerals, and while it is now included with the metals, the same method of computing the value has been retained as in others year, i.e., selling values as reported by operators have been used and not the average price prevailing in any recognized market.

## COBALT

Until the discovery in 1903 of the famous silver-cobalt-nickel-arsenide ores at Cobalt in Northern Ontario, the main supply of cobalt metal was drawn from the mines of Europe. Upon the opening up of the Canadian field and the consequent development of metallurgical processes for the treatment of cobalt-bearing ores by the Deloro Smelting and Refining Company at Deloro and the Coniagas Reduction Company at Thorold, the production from the Canadian mines became the source of the major portion of the world's supply. Discoveries of cobalt ores have recently been reported in other countries, and some development work has been done. Deposits were reported in the state of Oregon in the United States, in Chile and the Argentine Republic in South America, and a small shipment of cobalt ore was made in 1921 from Queensland, Australia, to Swansea, Wales. Cobalt-bearing ores have also been treated at Fredericktown, Missouri, but the production of cobalt or cobalt salts from other than Canadian ores has been small.

During 1923, one silver smelter in Canada went into voluntary liquidation, leaving two companies active throughout the year. These treated ores and residues from the cobalt district and marketed cobalt oxide, metallic cobalt and unseparated oxides and cobalt salts. Most of the cobalt residues from the cyanide process were treated in Canada during 1923, although some of these, as well as smelter residues amounting in all to 276.8 tons containing 93,892 pounds of

cobalt, were shipped abroad for treatment. In the preceding year, 518 tons of the same class of material containing 172,311 pounds of cobalt was exported. Small quantities of the metal were also contained in concentrates exported to the United States, but the producers were not paid for the cobalt contents of these shipments.

The cobalt production of Canada in 1923 was 888,061 pounds which at \$2.85 per pound would be worth \$2,530,974 as against 569,960 pounds worth \$1,852,370 or \$3.25 per pound in 1922. These figures were obtained as the total of the metallic cobalt contained in smelter products for the year, and cobalt in residues exported for treatment, valued at the quotations given above which were the average of the New York quotations for cobalt in each year.

Sales of cobalt products including metallic cobalt, cobalt oxide, unseparated oxides of cobalt and nickel, cobalt salts, and speiss residues, had a total value in 1923 of \$1,806,842 as compared with \$1,336,962 for sales of similar products in 1922. The total cobalt content of the marketed production was 760,105 pounds in 1923 as compared with 616,088 pounds in the preceding year. As computed from these sales the average return obtained for cobalt sold in its various forms was \$2.29 per pound in 1923 as against \$2.17 per pound in 1922.

The historical summary of the production of cobalt in Canada which dates from the year 1904 is shown in the following table. The figures given for the years 1904 to 1910 inclusive were prepared by the Ontario Bureau of Mines, and represent the estimated cobalt content of the ores shipped from the mines. From 1911 to 1920, inclusive, the quantities given are the cobalt content of all smelter products sold or shipped, such as cobalt metal, the oxides, mixed oxides and residues, etc. For 1922 and 1923 the practice has been changed to conform with the methods used for all other metals, and the metallic content of products *made* by the smelters, rather than sales or shipments, have been shown.

**Table 34.—Production of Cobalt in Canada, 1904-1923**

Year	Pounds	Year	Pounds	Year	Pounds
1904.....	32,000	1911.....	1,704,000	1918.....	737,157
1905.....	236,000	1912.....	663,093	1919.....	530,371
1906.....	642,000	1913.....	865,937	1920.....	546,023
1907.....	1,478,000	1914.....	871,891	1921.....	251,986
1908.....	2,448,000	1915.....	504,212	1922.....	569,960
1909.....	3,066,000	1916.....	840,536	1923.....	888,061
1910.....	2,196,000	1917.....	1,079,572		

\*See preceding paragraph.

**Table 35.—Summary of Cobalt Production Statistics, 1922 and 1923**

	1922			1923		
	Total Quantity	Cobalt Content	Value as Reported by Smelters	Total Quantity	Cobalt Content	Value as Reported by Smelters
Ores and residues treated.....	3,719 tons	536,400 lb.	.....	7,725 tons	1,163,191 lb.	.....
Output of smelters.....	.....	569,960 lb.	.....	.....	888,061 lb.	.....
Computed value.....	.....	\$1,852,370	.....	.....	\$2,530,974	.....
Products Marketed—						
Metallic cobalt..... Lb.	109,067	109,067	282,602	227,993	227,993	576,879
Cobalt oxide.....	398,697	279,088	798,271	454,772	318,340	879,529
Unseparated oxides.....	123,605	55,622	99,687	226,328	101,848	189,910
Cobalt salts.....	.....	.....	.....	.....	18,032	62,019
Speiss and other residues.....	1,036,000	172,311 (a)	156,402	553,628	93,892	98,505
<b>Total.....</b>	.....	<b>616,088</b>	<b>1,336,962</b>	.....	<b>760,105</b>	<b>1,806,842</b>

(a) Estimated.

<sup>1</sup>The Ontario Smelters and Refineries, Limited, which was one of the three smelters operating in 1922 made an assignment in 1923.

Table 36.—Imports into Canada and Exports of Cobalt, 1921, 1922 and 1923

	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
IMPORTS—						
Ore.....	100	131	200	233	600	57
<b>Total.....</b>	<b>100</b>	<b>131</b>	<b>200</b>	<b>233</b>	<b>600</b>	<b>576</b>
EXPORTS—						
Cobalt metal.....	60,035	141,199	111,830	288,776	239,614	571,908
Cobalt oxides and salts.....	190,483	405,300	430,024	770,511	486,239	886,746
Cobalt alloys.....	8,617	46,591	4,022	21,398	422	1,997
Ore.....		593,090				
<b>Total.....</b>		<b>1,186,180</b>		<b>1,080,685</b>		<b>1,460,651</b>

Table 37.—Imports of Cobalt into the United States, 1917-1923

(From *The Preliminary Report on Mineral Resources of United States, 1923*)

Year	Cobalt, cobalt ore and zaffer		Cobalt oxide	
	Pounds	Value	Pounds	Value
		\$		\$
1917.....	223,794	369,950	276,406	275,821
1918.....	504,391	628,099	208,596	291,699
1919.....	77,556	144,282	131,424	184,751
1920.....	156,862	331,672	202,704	399,605
1921.....	46,099	108,774	164,003	342,426
1922.....	131,559	328,471	217,530	435,895
1923.....	284,358	608,760	258,574	511,903

Table 38.—Monthly Average Prices of Cobalt, 1921, 1922 and 1923

	(a) London in Shillings per Pound			(b) New York in Cents per Pound		
	1921	1922	1923	1921	1922	1923
January.....	30/	14/	11/	510	325	285
February.....	30/	14/	11/	450	325	285
March.....	25/	14/	11/	450	325	285
April.....	20/	13/	11/	425	325	285
May.....	20/	12/	11/	400	325	285
June.....	17/	12/	11/	400	325	285
July.....	17/	12/	11/	325	325	300
August.....	17/	11/	11/	325	325	300
September.....	17/	11/	12/	325	325	300
October.....	16/	11/	12/	325	325	300
November.....	16/	11/	12/	325	325	300
December.....	15/	11/	12/	325	325	300

(a) From *The Mining Journal* l, London, E.C.(b) From *Engineering and Mining Journal-Press*, New York.

**Uses.**—Prior to the war the principal demand for cobalt in the form of oxide was for colouring in the ceramic industry. A small demand for cobalt metal now exists for use in making high-speed tools, such as “stellite” an alloy of cobalt, chrome, and tungsten, or molybdenum. A small amount is used for plating and for making salts, such as cobalt sulphate and cobalt carbonate, and also for making cobalt hydroxide. Small amounts of cobalt are also used in the form of oleate and resinate of cobalt as drying agents in the manufacture of varnishes.

**Prices.**—The market for cobalt which was very poor in 1915, gradually improved during the war. No quotations on the New York markets were available during 1918, 1919 and 1920 and a nominal Canadian price of \$2.50 per pound has been used in this report. During 1921 the quotations given in the "*Engineering and Mining Journal-Press*" ranged from \$3 to \$3.50 per pound; the former value was used. In 1922 the average price was taken at \$3.25 per pound, and in 1923 the quotation \$2.85 was used.

**Bounties.**—Under the provisions of the "Metal Refining Bounty Act," passed by the Ontario Legislature in 1907, bounties were paid to refineries amounting to \$126,987.08 on cobalt metal, cobalt oxide, and salts of cobalt, and \$43,153.85 on nickel metal, nickel oxide, and salts of nickel, or a total for both cobalt and nickel of \$170,140.95. The quantities produced and the bounties paid each year are given in detail in the annual reports of the Ontario Bureau of Mines.

The bounty was at the rate of 6 cents per pound on the metallic content of the oxides. The Act which expired in April, 1917, was not re-enacted.

## COPPER

The production of copper during 1923 amounted to 86,881,537 pounds (43,440.75 tons), which at the average New York price for the year 14.421 cents per pound was worth \$12,529,186, as against 42,879,818 pounds (21,439.9 tons) valued at \$5,738,177, or an average price of 13.382 cents per pound in 1922. The increase amounted to 102.6 per cent in quantity and 118.3 per cent in total value.

The 1923 production included: (a) 31,384,817 pounds contained in blister copper, all of which was exported for refining; (b) 31,538,710 pounds contained in nickel-copper matte, some of which was exported and some refined in Canada; (c) 76,784 pounds contained in copper sulphate; and (d) 23,881,226 pounds, the estimated recoveries from ores and concentrates exported for smelting and refining.

The corresponding figures for 1922 were (a) 29,595,440 pounds\*, (b) 10,851,898 pounds, (c) 57,708 pounds and (d) 2,374,772 pounds.

**Refined copper** was produced commercially in quantity for the first time in Canada in 1916 at the Trail Refinery of the Consolidated Mining and Smelting Company. The copper refinery of this company was not operated during 1923. The British America Nickel Corporation produced refined copper at their Deschenes plant for the first time in 1920. The total production of refined copper in Canada during the past eight years was as follows:—

Calendar year	1916.....	483 tons
"	" 1917.....	3,901 "
"	" 1918.....	3,809 "
"	" 1919.....	3,467 "
"	" 1920.....	2,590 "
"	" 1921.....	2,143 "
"	" 1922.....	365 "
"	" 1923.....	824 "

**Copper Sulphate** is produced at Trail, B.C., by the Consolidated Mining and Smelting Company and at Thorold, Ont., by the Coniagas Reduction Company. The amounts produced were 643,910 pounds in 1921; 230,835 pounds in 1922 and 307,135 pounds in 1923.

Copper sulphate is a by-product in the parting of gold and silver by the action of boiling concentrated sulphuric acid, the silver being dissolved as the sulphate and recovered by precipitating it with metallic copper. Copper sulphate may also be produced by treating scrap copper with a spray of dilute sulphuric acid in the presence of air. Copper sulphate forms blue crystals soluble in water. Heated to 240° C., it loses its water of crystallization and becomes a white anhydrous powder. Blue vitriol, or copper sulphate in solution, is used in the preparation of insecticides and germicides, and for many other purposes.

\*Part of this copper was refined in Canada in 1922.

Table 39.—Production of Copper in Canada, 1886-1923

Year	Pounds	Value	Cents per Pound	Year	Pounds	Value	Cents per Pound
		\$				\$	
1886.....	3,505,000	385,550	11-00	1905.....	48,092,753	7,497,660	15-590
1887.....	3,280,424	366,798	11-25	1906.....	55,609,888	10,720,474	19-278
1888.....	5,562,864	927,107	16-66	1907.....	56,979,205	11,398,120	20-004
1889.....	6,809,752	936,341	13-75	1908.....	63,702,873	8,413,876	13-208
1890.....	6,013,671	947,153	15-75	1909.....	52,493,863	6,814,754	12-982
1891.....	9,529,401	1,226,703	12-87	1910.....	55,692,369	7,094,094	12-738
1892.....	7,087,275	818,580	11-55	1911.....	55,648,011	6,886,998	12-376
1893.....	8,109,856	871,809	10-75	1912.....	77,832,127	12,718,548	16-341
1894.....	7,708,789	736,960	9-56	1913.....	76,976,925	11,753,606	15-260
1895.....	7,771,639	836,228	10-76	1914.....	75,735,960	10,301,606	13-602
1896.....	9,393,012	1,021,960	10-88	1915.....	100,785,150	17,410,635	17-275
1897.....	13,300,802	1,501,660	11-29	1916.....	117,150,028	31,867,150	27-202
1898.....	17,747,136	2,134,980	12-03	1917.....	109,227,332	29,687,989	27-180
1899.....	15,078,475	2,655,319	17-61	1918.....	118,769,434	29,250,536	24-628
1900.....	18,937,138	3,065,922	16-19	1919.....	75,053,581	14,028,265	18-691
1901.....	37,827,019	6,096,581	16-117	1920.....	81,600,691	14,244,217	17-456
1902.....	38,804,259	4,511,383	11-626	1921.....	47,620,820	5,953,555	12-502
1903.....	42,684,454	5,649,487	13-235	1922.....	42,879,818	5,738,177	13-382
1904.....	41,383,722	5,306,635	12-823	1923.....	86,881,537	12,529,186	14-421

PRODUCTION OF COPPER IN CANADA 1886-1922

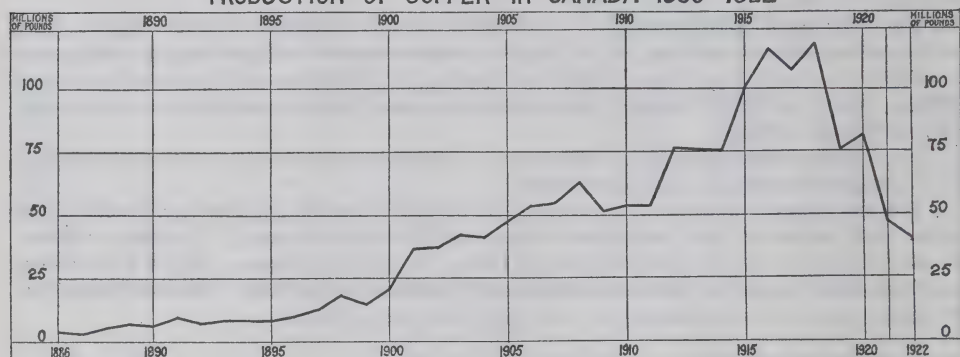


Table 40.—Production of Copper in Canada, by Provinces, 1921, 1922 and 1923

Province	1921			1922			1923		
	Pounds	Value	Per cent	Pounds	Value	Per cent	Pounds	Value	Per cent
		\$			\$			\$	
Quebec.....	352,308	44,045	0-8						
Ontario.....	12,821,385	1,602,930	26-9	10,943,636	1,464,477	25-5	31,656,800	4,565,227	36-5
Manitoba.....									
British Columbia.....	34,447,127	4,306,580	72-8	31,636,182	4,273,700	74-5	55,224,737	7,963,959	63-5
Yukon.....									
<b>Total.....</b>	<b>47,620,820</b>	<b>5,953,555</b>	<b>100-0</b>	<b>42,879,818</b>	<b>5,738,177</b>	<b>100-0</b>	<b>86,881,537</b>	<b>12,529,186</b>	<b>100-0</b>

**Exports and Imports.**—In point of value, Canadian exports of copper reached their peak of \$15,877,306 in 1920. While the exports in 1923 totalled only \$10,104,714 in value, comparison of the figures for quantities exported shows that the exports during 1923, with the exception of pig copper, were greatly in advance of those for 1920. Much of this gain, however, was due to the large increases in copper in ore exported for treatment, which was about three times as great as in 1920. Blister copper, old and scrap, and manufactured articles all showed gains in quantity exported but decreases in value due to the much lower prices obtaining in the year under review.

Imports into Canada of manufactured copper, while still much below the value recorded in former years, showed a recovery in 1923, and copper products valued at \$8,327,919 were imported. On the other hand, a survey of the quantities reported indicated that the consumption of copper almost equalled the record for 1920 when Canadian manufacturing industries were producing on a large scale.

Table 41 shows the list of copper commodities imported into and exported from Canada during the three years 1921, 1922 and 1923.

**Table 41.—Imports into Canada and Exports of Copper, 1921, 1922 and 1923**

	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>Imports—</b>						
Copper, in bars or rods, when imported by manufacturers of trolley, telegraph and telephone wires, electric wires and electric cables, for use only in the manufacture of such articles in their own factories.....	16,478,500	2,278,883	23,403,100	3,334,793	27,493,200	4,354,715
Copper, in bars or rods, in coil or otherwise, in lengths of not less than 6 feet, unmanufactured.....	789,400	140,422	445,900	80,701	1,463,800	284,484
Copper in blocks, pigs or ingots.....	925,452	135,563	1,145,463	159,671	8,167,041	1,215,349
Copper, old and scrap.....	307,900	37,955	1,470,900	205,447	3,046,400	432,362
Copper ore and concentrates.....	2,750,000	48,015	200	121	500	259
Copper, in strips, sheets or plates, not polished, planished or coated.....	1,833,800	426,854	2,293,800	497,013	2,389,300	551,166
Copper tubing in lengths of not less than 6 feet, and not polished, bent or otherwise manufactured.....	788,079	196,907	898,976	212,061	1,539,791	415,133
Copper wire, plain, tinned or plated.....	109,739	37,767	102,475	26,331	213,174	55,478
Copper wire cloth, or woven wire of copper.....		9,930		13,510		19,858
Copper wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....		195,453		232,872		390,566
Copper, all other manufactures of, n.o.p.....		316,944		351,694		429,377
Copper, precipitate of, crude.....	375	74	450	25		
Anodes of nickel, zinc, copper, silver or gold.....		4,164		2,757		1,504
Copper, sub-acetate of, or verdigris, dry.....	256	92	988	326	3,782	860
Copper, sulphate of (blue vitriol).....	1,929,256	127,359	3,097,450	167,503	3,374,871	176,858
<b>Total.....</b>		<b>3,956,382</b>		<b>5,284,825</b>		<b>8,327,919</b>
<b>Exports—</b>						
Copper, fine, contained in ore, matte, regulus, etc.....	10,511,500	1,029,220	19,063,100	1,730,681	34,548,000	3,607,031
Copper, blister.....	33,078,700	5,167,915	32,031,300	4,204,136	39,968,000	5,556,698
Copper, old and scrap.....	1,571,100	161,378	3,324,000	334,673	1,575,000	187,302
Copper, pig.....	2,678,200	355,693				
Copper in bars, rods, strips, sheets, plates and tubing.....	575,400	141,690	6,800	1,247	826,000	104,028
Copper wire and cable.....		569,648		208,683		387,359
Copper mfrs., n.o.p.....		30,250		53,569		262,296
<b>Total.....</b>		<b>7,455,794</b>		<b>6,532,989</b>		<b>10,104,714</b>

**Prices.**—Trade conditions were severely affected by the decrease in prices during the last quarter of 1920. In 1921, the average price for the twelve months was 12·502 cents with markets inactive. The year 1922 saw little improvement and the slight increase in the price to an average of 13·382 cents per pound for the period, was not sufficient to enable producers to reopen their idle properties on a normal scale. During the four months, February to May, 1923, the average price of copper was above 15 cents per pound but it gradually fell off until 12·823 cents was quoted in December. The average for the year was 14·421 cents. The low prices for the metal has retarded rapid development of many large copper deposits in Canada. The price of copper was greater than 15 cents per pound during the years 1900, 1905, 1906 and part of 1907, part of 1911 and all of 1912, and again during the period 1914 to the fall of 1920.

In recent years production in South America and Africa has greatly increased and the output from United States smelters has also advanced about 20 per cent since 1913. It is said that in 1923 the production from smelters in Montana, Michigan and some in Arizona and New Mexico amounting to about a billion pounds cost more than the current selling value of the copper produced but that the consumption of copper in the United States was still in excess of the amount made; competition, particularly from South America and Africa kept the price down.

The Canadian tariff provides for the payment of a bounty of 1½ cents per pound on copper bars and rods produced in Canada.

Table 42.—Monthly Average Prices of Copper, New York and London, 1921, 1922 and 1923

(From the *Engineering and Mining Journal-Press.*)

Months	Electrolytic Copper					
	New York in cents per pound			London, £ Sterling per ton of 2,240 pounds		
	1921	1922	1923	1921	1922	1923
January.....	12-597	13-465	14-510	79-119	72-321	71-409
February.....	12-556	12-864	15-355	75-925	66-125	74-500
March.....	11-976	12-567	16-832	71-190	65-739	81-464
April.....	12-438	12-573	16-663	71-786	64-028	81-331
May.....	12-742	13-111	15-440	74-298	66-554	76-568
June.....	12-697	13-575	14-663	75-682	69-333	73-238
July.....	12-170	13-654	14-321	75-286	70-321	72-364
August.....	11-634	13-723	13-822	72-705	69-932	70-000
September.....	11-948	13-748	13-323	72-295	70-917	68-275
October.....	12-673	13-632	12-574	73-476	70-693	64-250
November.....	13-035	13-598	12-727	74-386	70-216	66-477
December.....	13-555	14-074	12-823	74-525	70-132	67-611
Average.....	12-502	13-382	14-421	74-223	68-859	72-291

QUEBEC

The copper mines in the eastern townships of Quebec province were idle during 1923, and for the second time in 38 years there was no production of copper from this province. Some copper-pyritic ores from these deposits were treated for their sulphur content in the manufacture of sulphuric acid but no ores or residues were exported to the United States smelters for treatment.

Table 43.—Production of Copper in Quebec, 1886-1923

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	3,340,000	367,400	1900.....	2,220,000	359,418	1914.....	4,201,497	571,488
1887.....	2,937,900	330,514	1901.....	1,527,442	246,178	1915.....	4,197,482	725,115
1888.....	5,562,864	927,107	1902.....	1,640,000	190,666	1916.....	5,703,347	1,551,424
1889.....	5,315,000	730,813	1903.....	1,152,000	152,467	1917.....	5,015,560	1,363,229
1890.....	4,710,606	741,920	1904.....	760,000	97,455	1918.....	5,869,649	1,445,577
1891.....	5,401,704	695,469	1905.....	1,621,243	252,752	1919.....	2,691,695	503,105
1892.....	4,883,480	564,042	1906.....	1,981,169	381,930	1920.....	880,638	153,724
1893.....	4,468,352	480,348	1907.....	1,517,990	303,659	1921.....	352,308	44,045
1894.....	2,176,430	208,067	1908.....	1,282,024	169,330	1922.....		
1895.....	2,242,462	241,288	1909.....	1,088,212	141,272	1923.....		
1896.....	2,407,200	261,903	1910.....	877,347	111,757			
1897.....	2,474,970	279,424	1911.....	2,436,190	301,503			
1898.....	2,100,235	252,658	1912.....	3,282,210	536,346			
1899.....	1,632,560	287,494	1913.....	3,455,887	527,679	Total.....	103,407,653	16,498,566

## ONTARIO

Copper in Ontario is closely related to nickel and is derived principally from the nickel-copper ores of the Sudbury district. Small quantities of the metal are also contained in flotation concentrates exported every year from the mills in the Cobalt district, for treatment in United States smelters. About 12 tons was also recovered in 1923 from furnace cleanings and mattes exported from the silver smelters in Ontario. Due to the recovery in the production of nickel and also to improvement in the price of copper during 1923, there was a very marked revival in copper production and 31,656,800 pounds of the metal valued at \$4,565,227 was produced, or almost three times the output during the previous year when 10,943,636 pounds valued at \$1,464,477 was reported. Detailed statistics for copper from the nickel-copper ores are given under the section on nickel.

Table 44.—Production of Copper in Ontario, 1886-1923

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	165,000	18,150	1900.....	6,740,058	1,091,215	1914.....	28,948,211	3,937,536
1887.....	322,524	36,284	1901.....	8,695,831	1,401,507	1915.....	39,361,464	6,799,693
1888.....			1902.....	7,408,202	861,278	1916.....	44,997,035	12,240,094
1889.....	1,466,752	201,678	1903.....	7,172,533	949,285	1917.....	42,867,774	11,651,461
1890.....	1,303,065	205,233	1904.....	4,913,594	630,070	1918.....	47,074,475	11,593,502
1891.....	4,127,697	531,234	1905.....	8,779,259	1,368,656	1919.....	24,346,623	4,550,627
1892.....	2,203,795	254,538	1906.....	10,638,231	2,050,838	1920.....	32,059,993	5,596,392
1893.....	3,641,504	391,461	1907.....	14,104,337	2,821,432	1921.....	12,821,385	1,602,930
1894.....	5,207,679	497,854	1908.....	15,005,171	1,951,883	1922.....	10,943,636	1,464,477
1895.....	4,576,337	492,414	1909.....	15,746,699	2,044,237	1923.....	31,656,800	4,565,227
1896.....	3,167,256	344,598	1910.....	19,259,016	2,453,213			
1897.....	5,500,652	621,023	1911.....	17,932,263	2,219,297			
1898.....	8,375,223	1,007,539	1912.....	22,250,601	3,635,971			
1899.....	5,723,324	1,007,877	1913.....	25,885,929	3,952,522	<b>Total.....</b>	<b>545,389,928</b>	<b>97,073,256</b>

The bounty offered by the Ontario Government on copper, 95 per cent pure and on copper sulphate produced from ore mined and refined in the province was never gained, and the act known as the "*Metal Refining Bounty Act*" warranting this bounty which expired April 10, 1917, was not re-enacted.

## MANITOBA

During the years 1917 to 1920 the province of Manitoba was on record as one of the copper-producing provinces in Canada. The total production for the four years amounted to 9,866,328 pounds having a total value of \$2,039,942. The record was as follows—1917—1,116,000 pounds, valued at \$303,329; 1918—2,339,751 pounds valued at \$576,234; 1919—3,348,000 pounds valued at \$625,775 and 1920—3,062,577 pounds valued at \$534,604. These amounts were estimated as the copper recovered from ores shipped by the Mandy Mining Company operating near Schist Lake in The Pas district of Northern Manitoba. During 1921, 1922 and 1923, with increasing production costs, high freight rates, and other transportation difficulties it was found impossible to operate and no copper ores were shipped.

Much development has been carried on in this district during the past eight years. Towards the end of 1919 the Mandy Mining Company suspended operations, and has since sold its equipment, which has been installed on the Flin Flon group of claims on Flin Flon Lake in the same district.

## BRITISH COLUMBIA

The production of copper from British Columbia ores in 1923 amounted to 55,224,737 pounds, valued at \$7,963,959 as against 31,936,182 pounds valued at \$4,273,700 in 1922, an increase of 73.0 per cent in quantity and 80.6 per cent in value. The British Columbia output amounted to 63.5 per cent of the total production in Canada for 1923 and 74.5 per cent of the total for 1922.

This production included the copper content of the blister copper produced by the Granby Consolidated Mining and Smelting Company at Anyox and exported for refining in the United States; the copper equivalent of the copper sulphate produced at Trail and the estimated recoveries of copper from ores and concentrates exported. The copper smelter and refinery of the Consolidated Mining and Smelting Company at Trail, B.C., was idle throughout the entire period.

**Table 45.—Production of Copper in British Columbia, 1894-1923**

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1894*	324,680	31,039	1905*	37,682,251	5,876,222	1916	63,642,550	17,312,046
1895*	952,840	102,526	1906*	42,990,488	8,287,706	1917	57,730,959	15,691,275
1896*	3,818,556	415,459	1907*	40,832,720	8,168,177	1918	62,865,681	15,482,560
1897*	5,325,180	601,213	1908	37,041,115	4,892,390	1919	44,502,079	8,317,884
1898*	7,271,678	874,783	1909	35,658,952	4,629,245	1920	45,319,771	7,911,019
1899*	7,722,591	1,359,948	1910	35,270,006	4,492,693	1921	34,447,127	4,306,580
1900*	9,977,080	1,615,289	1911	35,279,558	4,366,198	1922	31,936,182	4,273,700
1901*	27,603,746	4,448,896	1912	50,526,656	8,256,561	1923	55,224,737	7,963,959
1902*	29,636,057	3,445,488	1913	45,791,579	6,991,916			
1903*	34,359,921	4,547,735	1914	41,219,202	5,606,636			
1904*	35,710,128	4,579,110	1915	56,692,988	9,793,714	<b>Total</b>	<b>1,017,367,058</b>	<b>174,641,967</b>

\*Metal contents of ores shipped as published by the Provincial Bureau of Mines.

Copper mining is one of the most important sections of the industry in the province, and in 1922 it contributed about 18 per cent of the total value from the metalliferous mines. The slump in the price of copper in 1921 and the large amounts of copper metal held in stock, continued to act as deterrents to production in the copper mining industry throughout 1922 and many mines which operated in 1919 and 1920 were compelled to reduce their operations or close down entirely. In 1923 the new mill constructed by the Britannia Mining and Smelting Company on Howe Sound commenced operating and their output greatly increased the tonnage of copper concentrates exported. The main production of copper in British Columbia has been drawn from the large low-grade copper deposits of the Pacific Coast and the Cassiar district representative properties in which are the Hidden Creek Group of Granby Mining, Smelting and Power Company and the properties of the Britannia Mining and Smelting Company.

**Table 46.—Production of Copper in Yukon to 1923**

Year	Pounds	Value	Year	Pounds	Value
		\$			\$
1906 (and previous)	156,000	23,400	1914	1,367,050	185,946
1907	511,838	102,388	1915	533,216	92,113
1908	112,264	14,828	1916	2,807,096	763,586
1909			1917	2,460,079	668,650
1910	286,000	36,431	1918	619,878	152,663
1911			1919	165,184	30,874
1912	1,772,660	289,670	1920	277,712	48,478
1913	1,843,530	281,489	1921-1923		
			<b>Total</b>	<b>12,912,507</b>	<b>2,690,516</b>

#### YUKON

There are important deposits of copper-bearing ore known to exist in the Yukon Territory some of which were operated during the period from 1906 until 1920. Since the latter year, no production of copper has been reported, and the grand total for the Territory remains at 12,912,507 pounds, or a little greater than that of Manitoba.

Table 47.—World's Production of Copper \* 1913, 1919-1923

(From the Year Book of the American Bureau of Metal Statistics, 1922 and 1923.)

(Short tons)

Country	1913	1919	1920	1921	1922	1923
<b>NORTH AMERICA—</b>						
United States.....	614,255	604,642	635,248	238,420	511,970	754,563
Mexico.....	58,185	66,661	49,866	13,576	29,842	60,538
Canada†.....	38,460	39,789	39,121	22,632	25,300	40,230
Cuba.....	3,747	10,991	7,491	8,600	11,788	11,963
<b>Total, North America.....</b>	<b>714,647</b>	<b>722,083</b>	<b>731,726</b>	<b>283,228</b>	<b>578,900</b>	<b>867,294</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	4,077	7,714	10,910	10,674	10,154	11,744
Chile.....	46,574	87,721	104,173	61,421	141,433	224,048
Peru.....	30,609	43,243	36,356	36,689	40,133	48,342
<b>Total, South America.....</b>	<b>81,260</b>	<b>138,678</b>	<b>151,439</b>	<b>108,784</b>	<b>191,720</b>	<b>284,134</b>
<b>EUROPE—</b>						
Austria-Hungary (a).....	4,518	713	1,747	4,600	4,630	1,698
Germany.....	27,881	17,384	19,015	20,944	18,739	18,739
Norway.....	3,021	482	613	6,311	10,869	8,816
Russia.....	37,358				2,205	2,205
Spain and Portugal.....	39,683	38,581	25,353	36,596	40,234	57,115
Sweden.....	4,645	4,442	1,793	1,465	67	5,180
Serbia.....	7,053	1,332	2,684	4,376	5,756	7,536
<b>Total, Europe.....</b>	<b>124,159</b>	<b>62,934</b>	<b>51,205</b>	<b>74,292</b>	<b>82,500</b>	<b>101,289</b>
<b>ASIA—</b>						
Japan.....	73,283	86,468	74,727	59,626	60,365	70,316
Other Asia.....		1,098	593	1,280	1,162	1,102
<b>Total Asia.....</b>	<b>73,283</b>	<b>87,566</b>	<b>75,320</b>	<b>60,906</b>	<b>61,527</b>	<b>71,418</b>
<b>AUSTRALASIA.....</b>	<b>49,901</b>	<b>18,118</b>	<b>29,327</b>	<b>20,869</b>	<b>13,754</b>	<b>19,782</b>
<b>AFRICA.....</b>	<b>25,236</b>	<b>34,548</b>	<b>33,708</b>	<b>42,501</b>	<b>58,219</b>	<b>81,469</b>
<b>OTHER COUNTRIES (b).....</b>	<b>4,188</b>	<b>5,510</b>	<b>5,510</b>	<b>5,510</b>	<b>7,716</b>	<b>7,716</b>
<b>Grand Total.....</b>	<b>1,072,674</b>	<b>1,069,437</b>	<b>1,078,235</b>	<b>596,090</b>	<b>994,336</b>	<b>1,433,102</b>

\* So far as possible, these statistics are based on blister copper, referred to countries wherein ore is originated.

† For Dominion Bureau of Statistics figures on Canada's production of copper, see Table 39.

(a) After 1918, Austria only. (b) Estimated.

## GOLD

## CANADA

The production of gold from all sources in Canada during the calendar year 1923 amounted to 1,233,341 fine ounces, valued at \$25,495,421, or a decrease of about 2·4 per cent below the previous year, when 1,263,364 fine ounces, valued at \$26,116,050 was produced.

The 1922 output was the second greatest annual production ever recorded for Canada, being exceeded only by the total of 1,350,057 ounces produced in 1900. Ontario's production exceeded the million-ounce mark for the first time, during this year.

The production for 1923 was derived from (a) alluvial gold, 80,344 ounces; (b) gold obtained from milling ores 981,299 ounces; (c) gold obtained from ores treated at Canadian copper and lead smelters 34,356 ounces; and (d) the estimated gold recoveries from ores and concentrates exported, 137,342 ounces. The corresponding figures for the year 1922 were; (a) 72,610 ounces, (b) 1,017,961 ounces, (c) 41,516 ounces, and (d) 131,277 ounces.

The production of gold by provinces was: Nova Scotia 655 ounces or about 0·05 per cent of the total for Canada; Quebec 667 ounces or 0·06 per cent; Ontario, 971,704 ounces, or 78·78 per cent; Manitoba, 31 ounces; British Columbia, 200,140 ounces, or 16·23 per cent; and the Yukon Territory 60,144 ounces or 4·88 per cent.

The decrease in gold production was due principally to power shortages in Ontario, where in the early spring months some important producers in Porcupine were unable to operate at full capacity. In British Columbia, a considerable quantity of gold is usually recovered in the residues from the copper refinery at Trail and as this department as well as the copper smelter

was idle for the whole of 1923, there was a decrease from this source of around 7 to 10 thousand ounces. There was also a slight decrease in the number of ounces recovered from free-milling gold ores. On the other hand, alluvial mining increased slightly, and the gold content of ores exported for treatment was higher. Yukon Territory's output of gold increased by about 6,000 ounces and Quebec which did not produce in 1922 again appeared on the list of producing provinces. Nova Scotia's output fell off about 40 per cent.

PRODUCTION OF GOLD IN CANADA 1858-1922.

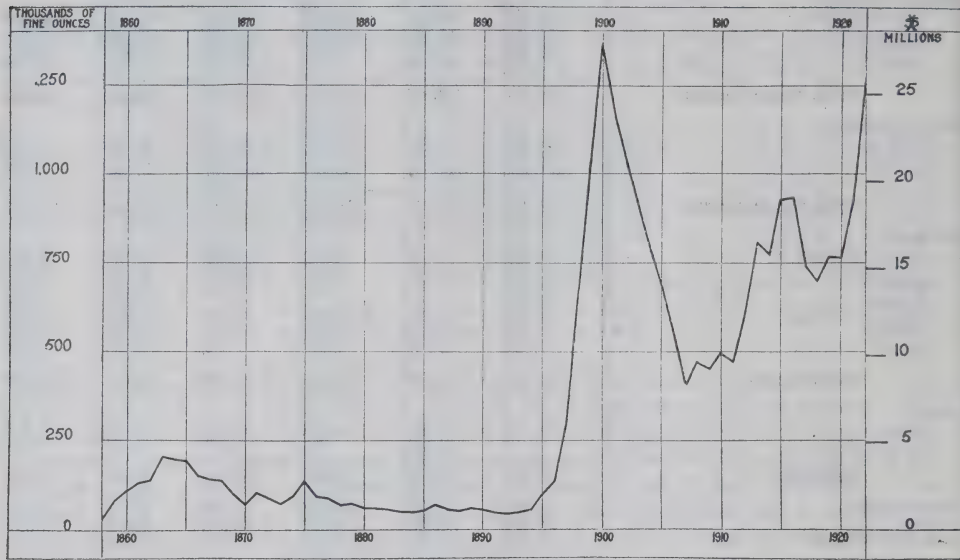


Table 48—Production of Gold in Canada, 1858-1923

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1858.....	34,104	705,000	1881.....	63,524	1,313,153	1904.....	796,374	16,462,517
1859.....	78,129	1,615,072	1882.....	60,288	1,246,268	1905.....	684,951	14,159,195
1860.....	107,806	2,228,543	1883.....	53,853	1,113,246	1906.....	556,415	11,502,120
1861.....	128,973	2,666,118	1884.....	51,202	1,058,439	1907.....	405,517	8,382,780
1862.....	135,391	2,798,774	1885.....	55,575	1,148,829	1908.....	476,112	9,842,105
1863.....	202,498	4,186,011	1886.....	70,782	1,463,196	1909.....	453,865	9,382,230
1864.....	199,605	4,126,199	1887.....	57,460	1,187,804	1910.....	493,707	10,205,835
1865.....	192,898	3,987,562	1888.....	53,145	1,098,610	1911.....	473,159	9,781,077
1866.....	152,555	3,153,597	1889.....	62,663	1,295,159	1912.....	611,885	12,048,794
1867.....	145,775	3,013,431	1890.....	55,620	1,149,776	1913.....	802,973	16,598,923
1868.....	134,169	2,773,527	1891.....	45,018	930,614	1914.....	773,178	15,983,007
1869.....	102,720	2,123,405	1892.....	43,905	907,601	1915.....	918,056	18,977,901
1870.....	83,415	1,724,348	1893.....	47,243	976,603	1916.....	930,482	19,234,976
1871.....	105,187	2,174,412	1894.....	54,600	1,128,688	1917.....	738,831	15,272,992
1872.....	90,283	1,866,321	1895.....	100,798	2,083,674	1918.....	669,681	14,463,686
1873.....	74,346	1,536,871	1896.....	133,262	2,754,774	1919.....	766,764	15,850,423
1874.....	97,856	2,022,862	1897.....	291,557	6,027,016	1920.....	765,007	15,814,098
1875.....	130,300	2,693,533	1898.....	666,386	13,775,420	1921.....	926,329	19,148,920
1876.....	97,729	2,020,233	1899.....	1,028,529	21,261,584	1922.....	1,263,364	26,116,050
1877.....	94,304	1,949,444	1900.....	1,350,057	27,908,153	1923.....	1,233,341	25,495,421
1878.....	74,420	1,538,394	1901.....	1,167,216	24,128,503			
1879.....	76,547	1,582,358	1902.....	1,032,161	21,336,667			
1880.....	63,121	1,304,824	1903.....	911,559	18,843,590			
						Total.....	24,828,525	513,251,259

\*Calculated from the value: one dollar=0.048375 ounces.

**Refined Metal.**—There were two refineries producing fine gold in Canada, namely, the Royal Mint, Ottawa, Ont., and the Consolidated Mining and Smelting Company of Canada, Ltd., at Tadanac, near Trail, B.C. From all ores treated during 1923, the latter company produced 11,113 fine ounces of gold. This gold was recovered principally, from the gold and copper ores, but also from silver-lead, and dry ores. Small quantities of imported ores were also treated by this company. Gold is also refined by the Royal Mint at Ottawa and during the year 613,738 fine ounces was produced, principally from bullion derived from the gold ores of Ontario and British Columbia and from the Yukon placers. A small percentage was recovered from scrap and from crude gold from foreign sources. The total production of gold refined in Canada during 1923 was therefore 624,851 fine ounces.

Table 49.—Refined Gold Produced at Trail, B.C.\*

Year	Fine oz.	Year	Fine oz.
1904.....	4,336	1914.....	11,088
1905.....	8,602	1915.....	17,813
1906.....	9,993	1916.....	23,608
1907.....	10,395	1917.....	49,661
1908.....	15,346	1918.....	61,212
1909.....	18,241	1919.....	47,283
1910.....	13,298	1920.....	42,636
1911.....	15,270	1921.....	56,297
1912.....	12,118	1922.....	18,940
1913.....	11,977	1923.....	11,113

\*Includes some gold derived from imported ores and from occasional shipments from Ontario, Manitoba, Alberta, and the Yukon.

Table 50.—Receipts of Gold Bullion at the Royal Mint, Ottawa, Ont.

Year	From Canadian Sources		From Foreign Countries	
	Oz. Gross	Value Gold Content	Oz. Gross	Value Gold Content
		\$		\$
1908.....	219.19	3,823.03		
1909.....	5,741.43	94,864.81	38.25	673.98
1910.....	65,009.35	1,079,223.42		
1911.....	89,463.11	1,469,087.43	511.24	9,128.55
1912.....	104,825.29	1,676,371.78	742.79	12,451.33
1913.....	212,076.41	3,363,870.30	633.23	11,609.94
1914.....	29,762.24	471,042.90	4,750.19	98,062.84
1915.....	89,231.47	1,402,605.19	871,693.79	15,838,222.01
1916.....	49,195.39	780,074.19	6,687,758.41	121,513,083.93
1917.....	55,779.96	840,265.33	8,196,151.04	148,919,793.48
1918.....	302,785.96	4,982,743.81	3,728,224.05	67,739,887.68
1919.....	654,906.28	10,865,770.57	8,917.02	134,756.38
1920.....	724,083.34	11,530,413.82		
1921.....	1,054,277.01	16,914,211.58	53.00	826.87
1922.....	1,376,863.35	22,469,160.42	345.22	5,387.93
1923.....	779,466.92	12,682,163.78	295.53	4,935.16

In addition, the Mines Branch of the Department of Mines operated the Vancouver Assay Office where crude bullion, nuggets and dust, were bought, melted and sold.

Table 51.—Receipts at Dominion Assay Office, Vancouver, B.C.

Year	Weight before melting	Weight after melting	Net Value	Year	Weight before melting	Weight after melting	Net Value
	ounces	ounces	\$		ounces	ounces	\$
1908 (a).....	90,175.48	89,117.76	1,478,894.00	1916.....	180,292.83	175,393.10	2,828,239.65
1909.....	48,478.58	47,576.27	789,267.94	1917.....	191,626.04	187,884.48	3,257,220.71
1910.....	46,064.31	45,228.92	746,101.92	1918.....	241,762.77	238,245.07	4,099,595.80
1911.....	39,784.70	39,069.31	647,416.38	1919.....	209,026.14	205,947.57	3,547,524.93
1912.....	59,068.82	57,961.98	974,077.14	1920.....	150,869.17	147,718.25	2,499,174.41
1913 (b).....	111,479.94	109,920.49	1,448,625.37	1921.....	163,070.56	160,893.48	2,834,490.61
1914.....	166,148.83	163,523.61	2,029,251.31	1922.....	129,891.63	125,758.41	2,105,989.64
1915.....	183,924.49	179,751.68	2,736,302.31	1923.....	129,043.63	124,546.48	2,051,369.65

(a) For 9 months only. (b) The removal of the assay charge in January 1913, accounts for the large increase.

Table 52.—Imports of Gold into Canada, 1921, 1922 and 1923

Item	1921	1922	1923
	\$	\$	\$
Gold—			
Fringe.....	62,519	38,939	42,283
Manufactures of Gold and Silver—			
Leaf.....	47,123	63,276	81,252
Sweepings.....	2,771	5,471	4,849
Manufactures, n.o.p.....	97,110	89,684	125,582
Electroplated ware.....	387,974	442,593	509,131

## NOVA SCOTIA.

The gold production in Nova Scotia has been derived almost entirely from quartz ores and in 1923, it amounted to 655 fine ounces valued at \$13,540 as against 1,042 fine ounces valued at \$21,540 in 1922.

The most prosperous year in the history of gold mining in Nova Scotia was 1902 when 30,358 fine ounces was recovered. The production then gradually decreased, the falling-off being attributed partly to the exhaustion of the mines and partly to the high cost of supplies and labour. Several small custom gold mills were formerly operated in this province, but during 1923 only one such mill reported any operations.

During 1923 there was a considerable revival of interest in gold mining in this province, and an interesting departure was the export of arsenical gold concentrates to Europe. The usual development work and prospecting was carried on during the season by different companies and individuals.

Table 53.—Production of Gold in Nova Scotia, 1862-1923

Year	Fine ounces	Value	Year	Fine ounces	Value
		\$			\$
1862.....	6,863	141,871	1894.....	18,834	389,338
1863.....	13,180	272,448	1895.....	21,919	453,119
1864.....	18,883	390,349	1896.....	23,876	493,568
1865.....	24,011	496,357	1897.....	27,195	562,165
1866.....	23,776	491,491	1898.....	26,054	538,590
1867.....	25,763	532,563	1899.....	29,876	617,604
1868.....	19,377	400,555	1900.....	28,955	598,553
1869.....	16,855	348,427	1901.....	26,459	546,963
1870.....	18,740	387,392	1902.....	30,348	627,357
1871.....	18,139	374,972	1903.....	25,533	527,806
1872.....	12,352	255,349	1904.....	10,362	214,209
1873.....	11,180	231,122	1905.....	13,707	283,353
1874.....	8,623	178,244	1906.....	12,223	252,676
1875.....	10,576	218,629	1907.....	13,675	282,686
1876.....	11,300	233,585	1908.....	11,842	244,799
1877.....	15,925	329,205	1909.....	10,193	210,711
1878.....	11,864	245,253	1910.....	7,928	163,891
1879.....	12,980	268,328	1911.....	7,781	160,854
1880.....	12,472	257,823	1912.....	4,385	90,638
1881.....	10,147	209,755	1913.....	2,174	44,935
1882.....	13,307	275,090	1914.....	2,904	60,031
1883.....	14,571	301,207	1915.....	6,636	137,180
1884.....	15,168	313,554	1916.....	4,562	94,305
1885.....	20,945	432,971	1917.....	2,210	45,685
1886.....	22,038	455,564	1918.....	1,176	24,310
1887.....	20,009	413,631	1919.....	850	17,571
1888.....	21,137	436,939	1920.....	690	14,263
1889.....	24,673	510,029	1921.....	*418	8,641
1890.....	22,978	474,990	1922.....	1,042	21,540
1891.....	21,841	451,503	1923.....	655	13,540
1892.....	18,865	389,965			
1893.....	18,436	381,095			
			<b>Total.....</b>	<b>911,436</b>	<b>18,841,127</b>

\* 439 fine ounces reported as received by Royal Mint from Nova Scotia, 21 of which came from old ore dumps.

## QUEBEC

The production of gold in Quebec during 1923 totalled 667 ounces valued at \$13,788. Since the year 1877, when the first production of gold was made, there has been a total of 27,501 ounces valued at \$568,459 produced. Due to the inactivity of the zinc-lead mines in Portneuf County and of the copper-pyrites mines of the eastern townships throughout the whole of 1922, no production was recorded for that year. In 1923, the Tetreault Mine resumed operations and exported gold-bearing lead concentrates to the United States for treatment. Interest continued in the new gold discoveries in northwestern Quebec; many claims were recorded and considerable development work was done.

Table 54.—Production of Gold in Quebec, 1877-1923

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1877.....	583	12,057	1894.....	1,412	29,196	1911.....	613	12,672
1878.....	868	17,937	1895.....	62	1,281	1912.....	642	13,270
1879.....	1,160	23,972	1896.....	145	3,000	1913.....	701	14,491
1880.....	1,605	33,174	1897.....	44	900	1914.....	1,292	26,708
1881.....	2,741	56,661	1898.....	295	6,089	1915.....	1,099	22,720
1882.....	827	17,093	1899.....	238	4,916	1916.....	1,034	21,375
1883.....	860	17,787	1900.....			1917.....	1,511	31,235
1884.....	422	8,720	1901.....	145	3,000	1918.....	1,939	40,083
1885.....	103	2,120	1902.....	391	8,073	1919.....	1,470	30,388
1886.....	193	3,981	1903.....	180	3,712	1920.....	955	19,742
1887.....	78	1,604	1904.....	140	2,900	1921.....	635	13,127
1888.....	181	3,740	1905.....	191	3,940	1922.....		
1889.....	58	1,207	1906.....	165	3,412	1923.....	667	13,788
1890.....	65	1,350	1907.....					
1891.....	87	1,800	1908.....					
1892.....	628	12,987	1909.....	193	3,990			
1893.....	759	15,696	1910.....	124	2,565	<b>Total.....</b>	<b>27,501</b>	<b>568,459</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## ONTARIO

The gold production of Ontario in 1923 amounted to 971,704 fine ounces valued at \$20,086,904 as against 1,000,340 fine ounces valued at \$20,678,862 in 1922 showing a decrease of 2.9 per cent.

Since 1914 Ontario has become by far the largest producer of gold in Canada and this remarkable increase was brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The falling-off in production during 1917 and 1918 was due to the abnormal conditions created by the war. The production increased rapidly through the three following years and in 1922 was the greatest ever recorded. All gold being paid for in New York funds, the exchange premium paid by the Royal Mint proved an important feature of gold-marketing and while it was of importance from the close of the war until the end of 1921, the gradual recovery in the value of the Canadian dollar in the United States exchanges has greatly decreased the premiums made by Canadian mines. While in 1920 the United States dollar had an average exchange value in Canadian funds of \$1.12270, the average exchange value in 1922 was \$1.0145, or nearly par, and in 1923 was \$1.0197.

Table 55.—Production of Gold in Ontario, 1887-1923

Year	Fine ounces†	Value	Year	Fine ounces†	Value	Year	Fine ounces†	Value
		\$			\$			\$
1887.....	327	6,760	1900.....	14,391	297,495	1913.....	219,801	4,543,690
1888.....			1901.....	11,844	244,837	1914.....	268,264	5,545,509
1889.....			1902.....	11,118	229,828	1915.....	406,577	8,404,693
1890.....			1903.....	9,096	188,036	1916.....	492,481	10,180,485
1891.....	97	2,000	1904.....	1,935	40,000	1917.....	423,261	8,749,581
1892.....	344	7,118	1905.....	4,402	91,000	1918.....	411,976	8,516,299
1893.....	708	14,637	1906.....	3,202	66,193	1919.....	505,739	10,454,553
1894.....	1,917	39,624	1907.....	3,212	66,398	1920.....	564,995	11,679,483
1895.....	3,015	62,320	1908.....	3,212	66,398	1921.....	708,213	14,640,062
1896.....	5,563	115,000	1909.....	1,569	32,425	1922.....	1,000,340	20,678,862
1897.....	9,157	189,294	1910.....	3,089	63,849	1923.....	971,704	20,086,904
1898.....	12,863	265,889	1911.....	2,062	42,625			
1899.....	20,394	421,591	1912.....	86,523	1,788,596	<b>Total.....</b>	<b>6,183,391</b>	<b>127,822,034</b>

†Calculated from the value: one dollar=0.048375 ounces.

## MANITOBA

There was no production of gold in Manitoba prior to 1917, but in that year and in 1918 shipments of gold-bearing copper ores were made from The Pas district in northern Manitoba to Trail, but because of the drop in the price of copper, and as large supplies of the metal were on hand at the end of hostilities, it has been impossible to make further shipments of such ores and the gold production from the province therefore has been less in recent years. Several important gold mines were developed and one or two small milling plants as at the Rex and Bingo Mines were operated in an experimental way. Operations were also carried on east of Lake Winnipeg in the Managotogan district.

Reports on the geology and mineral resources of The Pas, Rice Lake and Oiseau River areas of Manitoba are available from the Geological Survey.

Table 56.—Production of Gold in Manitoba, 1917-1923

Year	Fine ounces	Value	Year	Fine ounces	Value
		\$			\$
1917.....	440	9,095	1921.....	207	4,279
1918.....	1,926	39,814	1922.....	156	3,225
1919.....	724	14,966	1923.....	31	641
1920.....	781	16,145			
			<b>Total.....</b>	<b>4,265</b>	<b>88,165</b>

## SASKATCHEWAN

In the autumn of 1913 considerable interest was created in the reported gold discoveries at Beaver Lake (Amisk Lake). A number of prospectors went in with the opening of navigation. A good deal of prospecting was done during 1914, and some further work in 1915, but as yet no production has been reported.

## ALBERTA

Occasionally small quantities of gold have been recovered by prospectors in Alberta from the gravels of the Saskatchewan River; these are sold through the banks at Edmonton. During 1922 and 1923, a few small lots found their way into commerce in this manner but reports indicated that the recoveries were made in British Columbia along the Peace River. No production, therefore, may be credited to Alberta for the past two years. To date, the grand total of gold produced by this province amounted to \$15,109 fine ounces and was valued at \$312,333.

Table 57.—Production of Gold in Alberta, 1887-1923

Year	Fine ounces†	Value	Year	Fine ounces†	Value	Year	Fine ounces†	Value
		\$			\$			\$
1887.....	102	2,100	1900.....	242	5,000	1913.....		
1888.....	58	1,200	1901.....	726	15,000	1914.....	48	992
1889.....	967	20,000	1902.....	484	10,000	1915.....	195	4,026
1890.....	193	4,000	1903.....	48	1,000	1916.....	82	1,695
1891.....	266	5,500	1904.....	24	500	1917.....		
1892.....	508	10,506	1905.....	121	2,500	1918.....	27	558
1893.....	466	9,640	1906.....	39	800	1919.....	24	500
1894.....	726	15,000	1907.....	53	675	1920.....		
1895.....	2,419	50,000	1908.....	50	1,037	1921.....	49	1,013
1896.....	2,661	55,000	1909.....	25	525	1922.....		
1897.....	2,419	50,000	1910.....	89	1,850	1923.....		
1898.....	1,209	25,000	1911.....	10	207			
1899.....	726	15,000	1912.....	73	1,509	<b>Total.....</b>	<b>15,109</b>	<b>312,333</b>

† Calculated from the value: one dollar=0.048375 ounces.

## BRITISH COLUMBIA

The production of gold in British Columbia during 1923 was 200,140 fine ounces valued at \$4,137,261 as against 207,370 fine ounces valued at \$4,286,718 in 1922. The small decrease of 3.5 per cent was due to the inactivity of the copper department of the Trail smelters which recovers gold in the treatment of copper ores. The production from other sources of gold recovery in this province, e.g., placers and the copper and gold ores and concentrates exported to the United States, increased slightly. The production in 1923 included (a) alluvial gold 20,320 fine ounces or 10.2 per cent of the total for the province (b) bullion from milling ores 11,036 fine ounces or 5.6 per cent (c) smelter recoveries 33,380 fine ounces or 16.6 per cent and (d) the estimated recoveries from ores and concentrates exported 135,404 fine ounces or 67.6 per cent. The corresponding quantities for 1922 were (a) 18,240 fine ounces or 8.5 per cent (b) 17,294 fine ounces or 8.4 per cent (c) 41,296 fine ounces or 19.9 per cent and (d) 130,540 fine ounces or 63.2 per cent.

The amounts shown for alluvial gold are as published by the Provincial Mineralogist, while those from milling ores, smelter recoveries and ores exported have been compiled from reports received from smelters and mine operators.

Table 58—Production of Gold in British Columbia, 1858-1923

Year	Fine ounces†	Value	Year	Fine ounces†	Value	Year	Fine ounces†	Value
		\$			\$			\$
1858.....	34,104	705,000	1881.....	50,636	1,046,737	1903.....	284,108	5,873,036
1859.....	78,129	1,615,072	1882.....	46,154	954,085	1904.....	275,975	5,704,908
1860.....	107,806	2,228,543	1883.....	38,422	794,252	1905.....	285,529	5,902,402
1861.....	128,973	2,666,118	1884.....	35,612	736,165	1906.....	269,886	5,579,039
1862.....	128,528	2,656,903	1885.....	34,527	713,738	1907.....	236,216	4,883,020
1863.....	189,318	3,913,563	1886.....	43,714	903,651	1908.....	286,858	5,929,880
1864.....	180,722	3,735,850	1887.....	33,558	693,709	1909.....	250,320	5,174,579
1865.....	168,887	3,491,205	1888.....	29,834	616,731	1910.....	261,386	5,403,318
1866.....	128,779	2,662,106	1889.....	28,489	588,923	1911.....	238,496	4,930,145
1867.....	120,012	2,480,868	1890.....	23,918	494,436	1912.....	251,815	5,205,485
1868.....	114,792	2,372,972	1891.....	20,792	429,811	1913.....	297,459	6,149,027
1869.....	85,865	1,774,978	1892.....	19,327	399,525	1914.....	252,730	5,224,393
1870.....	64,675	1,336,956	1893.....	18,360	379,535	1915.....	273,376	5,651,184
1871.....	87,048	1,799,440	1894.....	25,664	530,530	1916.....	219,633	4,540,216
1872.....	77,931	1,610,972	1895.....	61,289	1,266,954	1917.....	133,742	2,764,693
1873.....	63,166	1,305,749	1896.....	86,504	1,788,206	1918.....	180,163	3,724,300
1874.....	89,233	1,844,618	1897.....	131,805	2,724,657	1919.....	167,252	3,457,406
1875.....	119,724	2,474,904	1898.....	142,215	2,939,852	1920.....	124,808	2,580,010
1876.....	86,429	1,786,648	1899.....	203,295	4,202,473	1921.....	150,792	3,117,147
1877.....	77,796	1,608,182	1900.....	228,916	4,732,105	1922.....	207,370	4,286,718
1878.....	61,688	1,275,204	1901.....	257,292	5,318,703	1923.....	200,140	4,137,261
1879.....	62,407	1,290,058	1902.....	288,383	5,961,409			
1880.....	49,044	1,013,827				<b>Total.....</b>	<b>9,001,816</b>	<b>186,084,090</b>

† Calculated from the value: one dollar=0.048375 ounces.

The statistics reported by the Provincial Bureau of Mines covering the 1922 and 1923 production follow. The quantities given for lode gold production, which are based on the metal contents of ores shipped, are as a rule somewhat higher than the record of smelter recoveries.

Table 59.—Production of Gold in British Columbia by Districts, 1922 and 1923

(From *Annual Report of the Minister of Mines for British Columbia.*)

Districts	1922				1923			
	Gold Placer		Gold Lode		Gold Placer		Gold Lode	
	Ounces	Value	Ounces	Value	Ounces	Value	Ounces	Value
Cariboo:—		\$		\$		\$		\$
Cariboo and Quesnel.....	9,615	192,300	.....	.....	11,128	230,000	42	868
Omineca.....	275	5,500	66	1,364	435	9,000	.....	.....
Cassiar:—								
Atlin, Liard and Stikine.....	7,450	149,000	3	62	7,570	156,500	1	21
Skeena, etc.....	.....	.....	167,733	3,467,041	.....	.....	155,030	3,204,469
East Kootenay:—								
Fort Steele.....	150	3,000	.....	.....	100	2,000	.....	.....
Windermere and Golden.....	.....	.....	.....	.....	.....	.....	.....	.....
West Kootenay:—								
Ainsworth.....	.....	.....	25	517	.....	.....	15	310
Nelson.....	.....	.....	2,392	49,443	.....	.....	319	6,594
Slocan and Slocan City.....	.....	.....	224	4,630	.....	.....	361	7,463
Trail Creek.....	.....	.....	8,256	170,651	.....	.....	6,983	144,339
Revelstoke, etc.....	50	1,000	4	83	50	1,000	.....	.....
Yale:—								
Grand Forks, Greenwood and Osoyoos.....	25	500	17,918	370,365	240	5,000	10,934	226,006
Similkameen, Nicola and Vernon.....	225	4,500	433	8,950	240	5,000	2	41
Yale, Ashcroft and Kamloops.....	150	3,000	364	7,524	145	3,000	562	11,616
Lillooet:—								
Lillooet.....	275	5,500	373	7,710	387	8,000	.....	.....
Southern Coast:—								
Vancouver Island.....	25	500	65	1,344	25	500	120	2,480
Mainland.....	.....	.....	.....	.....	.....	.....	4,876	100,787
<b>Total.....</b>	<b>18,240</b>	<b>364,800</b>	<b>197,856</b>	<b>4,089,684</b>	<b>20,320</b>	<b>420,000</b>	<b>179,245</b>	<b>3,704,994</b>

#### YUKON

The gold production from the Yukon in 1922 was derived from alluvial sands of the Dawson and Whitehorse districts and showed an increase above the quantity reported in the previous year. The output for 1923 was 60,144 fine ounces, valued at \$1,243,287 which included 60,024 fine ounces from alluvial sands and 120 fine ounces from lead ores shipped to United States smelters, as against 54,456 fine ounces, valued at \$1,125,705 in 1922. Of the 1922 production, 86 fine ounces was recovered from lode mine shipments.

Bounty was paid on 74,867.81 crude ounces which included 60,024 fine ounces of gold valued at \$1,240,806 and 13,476 fine ounces of silver valued at \$8,742, a total value of \$1,249,548. For 1922 the corresponding figures were 67,961 crude ounces, containing 54,370 fine ounces of gold, valued at \$1,123,927, and 12,233 fine ounces of silver valued at \$8,259 or a total value of \$1,132,186.

The following table shows statistics of gold produced in the Yukon during the past 38 years. Between the years 1898 and 1906 the figures were based upon receipts of gold at the United States mints and receiving offices, credited to the Canadian Yukon.

Table 60.—Production of Gold in the Yukon, 1885-1923

Year	Fine Ounces†	Value	Year	Fine Ounces†	Value	Year	Fine Ounces†	Value
		\$			\$			\$
1885)			1899.....	774,000	16,000,000	1913.....	282,838	5,846,780
1886).....	4,837	100,000	1900.....	1,077,553	22,275,000	1914.....	247,940	5,125,374
1887.....	3,386	70,000	1901.....	870,750	18,000,000	1915.....	230,173	4,758,098
1888.....	1,935	40,000	1902.....	701,437	14,500,000	1916.....	212,700	4,396,900
1889.....	8,466	175,000	1903.....	592,594	12,250,000	1917.....	177,667	3,672,703
1890.....	8,466	175,000	1904.....	507,938	10,500,000	1918.....	102,474	2,118,325
1891.....	1,953	40,000	1905.....	381,001	7,876,000	1919.....	90,705	1,875,039
1892.....	4,233	87,500	1906.....	270,900	5,600,000	1920.....	72,778	1,504,455
1893.....	8,514	176,000	1907.....	152,381	3,150,000	1921.....	65,994	1,364,217
1894.....	6,047	125,000	1908.....	174,150	3,600,000	1922.....	54,456	1,125,705
1895.....	12,094	250,000	1909.....	191,565	3,960,000	1923.....	60,144	1,243,287
1896.....	14,513	300,000	1910*	221,091	4,570,362			
1897.....	120,937	2,500,000	1911.....	224,197	4,634,574			
1898.....	483,750	10,000,000	1912.....	268,447	5,549,296	<b>Total.....</b>	<b>8,684,986</b>	<b>179,534,615</b>

† Calculated from the value: one dollar=0.043375 ounces.

\* Including a small production from lode mines, from 1910 to 1923 inclusive.

Since 1906 a royalty of two and one-half per cent on all gold produced has been collected by the Canadian Government which places a nominal value of \$15 per crude ounce recovered. The statistics shown for these years are based on the returns supplied by the Mining Lands and Yukon Branch of the Department of the Interior, in which the fine gold is estimated as 80 per cent of all crude gold, fine silver as 12 per cent, and the remaining 8 per cent is regarded as worthless base metals.

The Vancouver Assay Office, which is operated by the Department of Mines, Ottawa, receives and melts a considerable portion of the placer gold from the Yukon. During 1923 there was deposited from this territory 73,360.82 ounces, valued, after all charges had been deducted at \$1,201,133, or \$16.37 per ounce, as against 69,161.19 ounces, valued at \$1,126,702, or \$16.29 per ounce in 1922.

Table 61—Receipts from the Yukon, at the Dominion Government Assay Office, Vancouver, B.C., 1908-1923

Year	Weight before Melting	Net Value	Average Value	Year	Weight before Melting	Net Value	Average Value
	Ounces	\$	\$		Ounces	\$	\$
1908 (a).....	60,132.00	1,000,296	16.63	1916.....	95,005.82	1,525,724	16.06
1909.....	5,003.12	83,871	16.75	1917.....	79,532.35	1,262,207	15.87
1910.....	3,594.87	62,094	17.27	1918.....	121,310.37	1,921,198	15.84
1911.....	2,073.61	34,944	16.88	1919.....	111,138.65	1,813,883	16.32
1912.....	2,211.88	36,481	16.41	1920.....	74,456.01	1,206,579	16.21
1913 (b).....	15,235.29	247,189	16.22	1921.....	82,219.92	1,340,225	16.30
1914.....	56,564.83	915,914	16.21	1922.....	69,161.19	1,126,702	16.29
1915.....	87,040.87	1,418,497	16.28	1923.....	73,360.82	1,201,133	16.37

(a) For nine months only.

(b) The removal in 1913 of the assay charge accounts for the great increase.

Table 62.—Production of Crude Gold in the Yukon, 1921, 1922 and 1923

(Gross weight of dust, nuggets, and bullion in ounces)

Month	1921	1922	1923
January.....	813.77	18.90	969.26
February.....	622.22	815.64	1,040.36
March.....	22.85	295.52	2.39
April.....	36.18	82.30	.....
May.....	.....	.....	.....
June.....	14,717.00	14,360.08	10,352.94
July.....	13,585.40	10,288.07	9,176.99
August.....	14,742.48	8,062.47	9,953.42
September.....	11,773.73	15,635.29	11,924.54
October.....	22,106.00	11,697.89	24,881.87
November.....	3,183.19	4,613.04	4,794.17
December.....	791.75	2,092.53	1,771.87
<b>Total.....</b>	<b>82,391.57</b>	<b>67,961.73</b>	<b>74,867.81</b>

Between 1898 and March 31, 1924, a royalty to the extent of \$4,863,323.04 was collected on the gold production of this district. The yearly amounts collected, as well as the annual production of gold as ascertained by the Department of the Interior, are shown below. The difference between these figures and those shown in the table of annual production, which are based on mint receipts of Yukon gold is probably due to three factors: (1) the fixing of the value of the gold for royalty purposes at \$15 per ounce, (2) the probability that, in the earlier years of royalty collection, considerable quantities of gold dust left the camps unrecorded and escaped royalty payments, and (3) the fact that in the last few years there has been a small production from lode mines.

Table 63.—Gold Production in the Yukon and the Royalty Collected

(Supplied by Controller H. H. Rowatt, of the Mining Lands and Yukon Branch of the Department of the Interior.)

Fiscal Year	Total Gold Production	Total Exemption	Royalty Collected on	Royalty Paid
	\$	\$	\$	\$
Ending June, 1898.....	3,072,773	339,845	2,732,928	273,292.82
Ending June, 1899.....	7,582,283	1,699,657	5,882,626	588,262.37
Ending June, 1900.....	9,809,464	2,501,744	7,307,720	730,771.99
Ending June, 1901.....	9,162,082	1,927,666	7,234,416	592,660.98
Ending June, 1902.....	9,566,340	1,199,114	8,367,226	331,436.79
Ending June, 1903.....	12,113,015	.....	12,113,015	302,893.48
Ending June, 1904.....	10,790,663	.....	10,790,663	272,217.96
Ending June, 1905.....	8,222,054	.....	8,222,054	206,760.87
Ending June, 1906.....	6,540,007	.....	6,540,007	163,963.25
Ending March, 1907.....	3,304,791	.....	3,304,791	82,622.42
Ending March, 1908.....	2,820,162	.....	2,820,162	70,504.65
Ending March, 1909.....	3,260,282	.....	3,260,282	81,507.07
Ending March, 1910.....	3,594,251	.....	3,594,251	89,844.10
Ending March, 1911.....	4,126,728	.....	4,126,728	103,168.19
Ending March, 1912.....	4,024,237	.....	4,024,237	100,606.29
Ending March, 1913.....	5,018,412	.....	5,018,412	125,460.52
Ending March, 1914.....	5,301,508	.....	5,301,508	132,537.69
Ending March, 1915.....	4,649,634	.....	4,649,634	116,241.04
Ending March, 1916.....	4,458,278	.....	4,458,278	111,457.19
Ending March, 1917.....	3,960,207	.....	3,960,207	99,007.92
Ending March, 1918.....	3,266,019	.....	3,266,019	81,650.55
Ending March, 1919.....	1,947,082	.....	1,947,082	48,677.07
Ending March, 1920.....	1,660,450	.....	1,660,450	41,501.12
Ending March, 1921.....	1,246,486	.....	1,246,486	31,273.76
Ending March, 1922.....	1,230,987	.....	1,230,987	30,774.68
Ending March, 1923.....	1,032,762	.....	1,032,762	25,819.04
Ending March, 1924.....	1,136,368	.....	1,136,368	28,409.23
<b>Total.....</b>	<b>132,897,325</b>	<b>.....</b>	<b>125,229,309</b>	<b>4,863,323.04</b>

Table 64.—World's Production of Gold, (a) 1913, 1919-1923

(From the Year Book of the American Bureau of Metal Statistics, 1923)

(Fine ounces).

	1913	1919	1920	1921	1922	1923
<b>NORTH AMERICA—</b>						
United States.....	4,299,784	2,913,628	2,476,166	2,422,006	2,363,075	2,485,445
Canada.....	802,973	766,764	765,007	926,329	1,263,364	1,233,341
Mexico.....	829,783	758,354	735,078	684,634	748,291	776,808
<b>Total North America.....</b>	<b>5,932,540</b>	<b>4,443,746</b>	<b>3,976,251</b>	<b>4,032,969</b>	<b>4,374,730</b>	<b>4,495,594</b>
<b>Central America and West Indies.....</b>	<b>131,661</b>	<b>159,638</b>	<b>145,125</b>	<b>120,937</b>	<b>120,937</b>	<b>*120,000</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....		242	242	290	16,012	
Chili.....	8,467	37,007	43,538	45,139	79,828	
Brazil.....	109,072	96,750	125,775	134,482	146,668	
Colombia.....	143,757	290,251	280,575	290,250	290,250	
Ecuador.....	19,665	38,700	36,281	36,259	36,259	
Peru.....	23,813	65,232	62,757	77,385	81,436	
Guiana—British.....	65,475	16,216	9,675	12,828	10,876	
Dutch.....	22,757	15,932	12,506	11,285	12,024	
French.....	147,571	53,212	43,538	48,375	48,375	
Venezuela.....	21,517	29,025	18,839	30,253	17,361	
Other countries.....	1,572	677	4,858	3,967	3,967	
<b>Total South America.....</b>	<b>563,666</b>	<b>613,244</b>	<b>638,584</b>	<b>690,513</b>	<b>743,056</b>	<b>*745,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	105,425			161	546	
Czecho-Slovakia.....		6,076	8,761	11,413	9,645	
France.....	102,912	7,298		96		
Great Britain.....	864		32			
Russia and Siberia.....	1,282,313	532,115	57,225	43,177	157,945	
Other countries.....	24,290	1,446	9,116	49,640	56,394	
<b>Total Europe.....</b>	<b>1,515,804</b>	<b>546,935</b>	<b>75,134</b>	<b>104,487</b>	<b>224,530</b>	<b>*300,000</b>
<b>AUSTRALASIA—</b>						
New South Wales.....	149,657	65,839	48,907	51,173	25,222	19,500
Queensland.....	265,735	121,030	115,230	40,376	80,584	84,814
South Australia.....	6,556	3,224	1,697	2,660	1,000	3,000
Victoria.....	434,932	135,428	168,979	104,512	109,273	94,000
West Australia.....	1,314,043	734,066	617,842	553,731	538,245	500,500
New Zealand.....	343,595	222,063	124,375	135,720	144,117	*140,000
Tasmania.....	33,400	7,686	6,246	5,340	3,431	3,000
Other countries.....	21,393	12,508	12,502	9,779	9,789	*9,000
<b>Total Australasia.....</b>	<b>2,569,311</b>	<b>1,301,844</b>	<b>1,095,778</b>	<b>903,291</b>	<b>911,661</b>	<b>853,814</b>
<b>ASIA—</b>						
British India.....	589,109	507,260	499,068	432,723	438,015	400,000
China.....	176,999	159,637	125,000	100,000	100,000	*100,000
Chosen (Korea).....	173,306	135,450	76,000	130,893	127,892	*125,000
British East Indies.....	65,402	31,444	29,025	24,188	29,025	*29,000
Dutch East Indies.....	163,852	92,592	90,920	94,168	104,295	*100,000
Formosa.....	39,406	20,186	13,500	28,455	28,356	*28,000
Japan.....	174,846	233,405	248,181	237,106	233,809	*225,000
Other countries.....	24,596	39,810	29,366	30,637	16,262	*16,000
<b>Total Asia.....</b>	<b>1,497,516</b>	<b>1,219,784</b>	<b>1,111,060</b>	<b>1,078,176</b>	<b>1,077,654</b>	<b>1,023,000</b>
<b>AFRICA—</b>						
Belgian Congo.....	44,334	108,442	96,804	65,715	74,299	101,144
Madagascar.....	60,769	22,505	16,686	14,660	578	*1,000
Rhodesia.....	690,541	593,446	553,067	586,908	655,296	650,000
British West Africa.....	384,836	225,226	230,948	203,606	213,395	205,000
Transvaal, Cape Colony and Natal.....	8,798,713	8,331,651	8,331,651	8,128,722	7,009,858	9,133,000
Other countries.....	45,623	33,476	26,905	44,984	52,909	*50,000
<b>Total Africa.....</b>	<b>10,024,816</b>	<b>9,314,746</b>	<b>9,256,061</b>	<b>9,044,595</b>	<b>8,006,335</b>	<b>10,140,144</b>
<b>Grand Total.....</b>	<b>22,145,314</b>	<b>17,629,977</b>	<b>16,297,993</b>	<b>15,974,962</b>	<b>15,458,903</b>	<b>17,677,552</b>

(a) 1913-1922, as reported by the Director of the Mint, with some changes. 1923, as compiled by American Bureau of Metal Statistics, conjectural figures (\*) based on the 1922 outputs being inserted where necessary.

## IRON ORE

The total shipments of iron ore from Canadian mines during 1923 amounted to 30,759 short tons, the net value of which was reported as \$114,944 as compared with 17,971 tons shipped in 1922 with a value of \$56,993. This production for 1923 included 30,447 tons of beneficiated magnetite from Ontario worth \$113,543 and of which 5,358 tons valued at \$18,878 was exported to the United States; 243 tons valued at \$1,215 of magnetite exported from British Columbia and 69 tons of ilmenite a titaniferous iron oxide valued at \$186 exported from Quebec province.

Pig iron derived from Canadian ores smelted in Canadian blast furnaces during the period totalled 20,739 short tons which at the year's average price for pig iron of \$20.44 per short ton had a computed value of \$432,298. The 1922 production of pig iron made from Canadian ore was 8,095 short tons worth \$178,980 or \$22.11 per ton.

No domestic ores were mined in Nova Scotia during the period but the British Empire Steel Corporation continued to operate their iron mines in Newfoundland. The shipments during 1923 which were lower than those of the previous year comprised 808,236 tons valued at \$1,826,129 of which 451,483 tons worth \$1,017,071 was shipped to Nova Scotia, the balance being exported to European points.

The shipments from Wabana in 1922 totalled 1,123,327 tons valued at \$2,187,344, of which 311,482 tons worth \$614,394 was shipped to Nova Scotia and the balance to Europe.

## PIG IRON

(Ton = 2,000 lb.)

The total production of pig iron in Canada in 1923 was 985,401 tons having a value of \$21-355,595 as compared with an output of 428,923 tons in 1922 valued at \$8,819,242, an increase of 556,478 short tons or 130 per cent. The minimum monthly output for 1923 was recorded in January at 45,628 tons; the production rose steadily to a peak of 113,717 tons in May and then remained more or less steady until the downward trend started in September.

The 1923 output taken by grades and by provinces showed an increase of over 100 per cent in all cases. In Nova Scotia the production of blast furnace pig iron was 310,972 tons as compared with 135,261 tons in 1922, while in Ontario the tonnages were 674,429 tons in 1923 and 293,662 tons in the previous year. By grades the 1923 production included: basic 615,983 tons, foundry and malleable 369,335 tons, direct castings 83 tons; in 1922 the quantities were: basic 283,697 tons, foundry and malleable 145,226 tons.

The cost of materials charged to blast furnaces in 1923 amounted to \$15,698,259 and included 1,796,088 tons of ore valued at \$7,217,390; mill cinder, etc. and scrap 59,310 tons worth \$256,654, fluxing material (principally limestone) 483,948 tons at \$668,548, coke 989,364 tons at \$7,439,553 and 10,323,258 kilowatt hours of electric power at \$115,898.

Blast furnaces for the production of pig iron on a large scale are situated at Sydney, Nova Scotia, and in Ontario at Hamilton, Sault Ste. Marie, Port Colborne and Midland. In 1923, furnaces were in blast at all points except Midland; steel furnaces and rolling mills were operated in conjunction with the blast furnace plants at the first three places. In addition to these there are blast furnaces standing at Port Arthur, Parry Sound and Deseronto which have not been in operation for several years. The Canadian Steel Company has two blast furnaces and a steel plant under construction at Ojibway near Windsor, Ont.

Electric furnaces for the production of ferro-alloys were operated in Ontario at Hamilton, Niagara Falls, Thorold and Welland. The output of ferro-alloys amounted to 32,436 tons an increase of 40 per cent over the 23,239 tons produced in 1922.

The exports of pig iron in 1923 amounted to 37,955 tons valued at \$954,681 and exceeded by more than 100 per cent the pig iron exports of 17,236 tons at \$376,438 in 1922. For ferro-alloys (ferro-silicon) the exports amounted to 23,981 tons valued at \$889,237 as compared with an export of 20,350 tons valued at \$897,272 for the previous year.

The imports into Canada during 1923 included 37,955 tons pig iron valued at \$954,681 and 9,325 tons ferro-alloys (ferro-silicon, ferro-manganese and speigeleisen) valued at \$811,680. The corresponding figures for 1922 were 58,796 tons of pig iron at \$1,266,268 and 3,771 tons ferro-alloys at \$237,574.

Detailed statistics of the iron and steel industry in Canada are given in a special Bureau report entitled "Iron and Steel and Their Products."

Table 65.—Summary of Iron and Steel Statistics, 1921, 1922 and 1923

	—	1921	1922	1923
	Short tons			
Iron ore shipped from mines.....	"	59,500	17,971	30,759
Canadian iron ore charged to blast furnaces.....	"	126,653	23,398	37,812
Imported.....	"	1,141,007	778,141	1,759,466
Iron ore charged to steel furnaces.....	"	36,308	24,980	58,120
Pig-iron made in blast furnaces.....	"	664,993	428,923	985,401
" electric furnaces.....	"	683		
" exported.....	"	2,685	17,226	60,799
" imported.....	"	18,636	58,796	37,955
Ferro-alloys made.....	"	24,594	23,239	32,436
" imported.....	"	2,235	3,771	8,605
" exported.....	"	10,031	20,350	23,981
Pig-iron and ferro-alloy consumption.....	"	708,278	477,143	
" used in steel furnaces.....	"	465,750	313,000	594,810
Steel ingots and castings made.....	"	747,582	539,974	990,942
Steel rails made.....	"	298,110	140,970	231,684
Canadian coke used in iron blast furnaces.....	"	244,830	172,250	336,369
Imported.....	"	590,199	300,269	552,995
Number of completed blast furnaces.....	No.	20	20	20
Number of men employed at blast furnaces.....	"	614	521	778
Wages paid at blast furnaces.....	\$	918,196	685,593	1,231,740
Value of pig-iron produced.....	\$	15,518,582	8,819,242	21,355,595
" iron and steel goods exported.....	\$	32,620,942	41,800,812	67,035,808
" iron and steel goods imported.....	\$	127,470,117	126,467,856	173,720,299

## LEAD

The production of lead in Canada in 1923 amounted to 111,234,466 pounds (55,617.2 tons) which at the average market price in Montreal for the year of 7.179 cents per pound, was valued at \$7,985,522, as against 93,307,171 pounds (46,653.58 tons) valued at \$5,817,702 in 1922, when the average price was 6.235 cents per pound. The increase amounted to about 19.2 per cent in quantity and 37.2 per cent in value.

The production in 1923 included (a) 103,179,642 pounds (51,589.8 tons) of pig lead produced at Trail, B.C. and Galetta, Ontario; (b) 7,968,964 pounds (3,724.5 tons), the estimated recoveries from lead ores and concentrates exported to the United States, and (c) 85,860 pounds (42.9 tons), estimated as recovered from ores and concentrates exported from Cobalt to United States smelters.

The corresponding figures for 1922 were (a) 88,606,869 pounds (44,303.4 tons); (b) 4,670,621 pounds (2,335.3 tons) and (c) 29,681 pounds (14.8 tons).

This production was mainly from British Columbia, with small amounts from Ontario, Quebec and Yukon Territory.

Table 66.—Production\* of Lead from Canadian Ores, 1887-1923

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per Pound
1887.....	204,800	\$ 9,216	5.400	1906.....	54,608,217	\$ 3,089,187	5.657
1888.....	674,500	29,812	4.420	1907.....	47,738,703	2,542,086	5.325
1889.....	165,100	6,488	3.930	1908.....	43,195,733	1,814,221	4.200
1890.....	105,000	4,704	4.480	1909.....	45,857,424	1,692,139	3.690
1891.....	88,665	3,857	4.350	1910.....	32,987,508	1,216,249	3.687
1892.....	808,420	33,064	4.090	1911.....	23,784,969	827,717	3.480
1893.....	2,135,023	79,636	3.730	1912.....	35,763,476	1,597,554	4.467
1894.....	5,703,222	187,636	3.290	1913.....	37,662,703	1,754,705	4.659
1895.....	16,461,794	531,716	3.230	1914.....	36,337,765	1,627,568	4.479
1896.....	24,199,977	721,159	2.980	1915.....	46,316,450	2,593,721	5.600
1897.....	39,018,219	1,396,853	3.580	1916.....	41,497,615	3,532,692	8.513
1898.....	31,915,319	1,206,399	3.780	1917.....	32,576,281	3,628,020	11.137
1899.....	21,862,436	977,250	4.470	1918.....	51,398,002	4,754,315	9.250
1900.....	63,169,821	2,760,521	4.370	1919.....	43,827,699	3,053,037	6.966
1901.....	51,900,958	2,249,387	4.334	1920.....	35,953,717	3,214,262	8.940
1902.....	22,956,381	934,095	4.069	1921.....	66,679,592	3,828,742	5.742
1903.....	18,139,283	768,562	4.237	1922.....	93,307,171	5,817,702	6.235
1904.....	37,531,244	1,617,221	4.309	1923.....	111,234,466	7,985,522	7.179
1905.....	56,864,915	2,676,632	4.707				

\* Previous to 1913 the figures reported show the metal content of the shipments and are somewhat in excess of the actual amount recovered. Since 1912 the data given represent the quantity of lead produced in Canada from domestic ores, together with the estimated lead recovery from lead ores and concentrates exported. From 1887 to 1908, average prices at New York; 1909 and 1910, average prices at Toronto; from 1911 to date, average prices in Montreal were used in making up the values shown; since 1920 the quotations used have been furnished by the Consolidated Mining and Smelting Co., Montreal, Que.

## PRODUCTION OF LEAD FROM CANADIAN ORES 1887-1922.

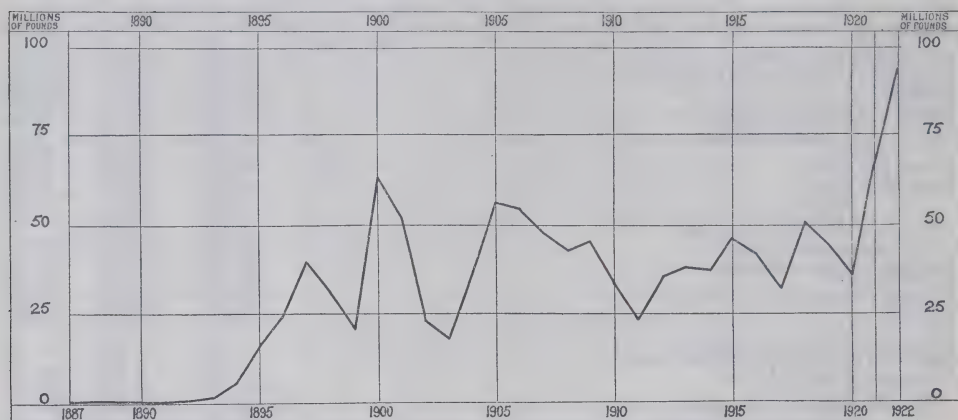


Table 67.—Production of Lead by Provinces, 1887-1923

Calendar Year	Quebec		Ontario		British Columbia		Yukon	
	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$
1887.....					204,800	9,216		
1888.....					674,500	29,813		
1889.....					165,100	6,488		
1890.....	105,000	4,704						
1891.....	88,665	3,857						
1892.....					808,420	33,064		
1893.....	3,931	146			2,131,092	79,490		
1894.....					5,703,222	187,636		
1895.....					16,461,794	531,716		
1896.....					24,199,977	721,159		
1897.....	177,084	6,340			38,841,135	1,390,513		
1898.....	221,760	8,382			31,693,559	1,198,017		
1899.....					21,862,436	977,250		
1900.....	11,200	490			63,158,621	2,760,031		
1901.....	318,052	13,784			61,582,906	2,235,603		
1902.....	420,000	17,090			22,536,381	917,005		
1903.....			50,000	2,119	18,089,283	766,443		
1904.....			885,000	38,135	36,646,244	1,579,086		
1905.....			284,212	13,378	56,580,703	2,663,254		
1906.....			2,200,000	124,454	62,408,217	2,964,733		
1907.....					47,738,703	2,542,089		
1908.....					43,195,733	1,814,221		
1909.....					45,857,424	1,692,139		
1910.....					32,987,508	1,216,249		
1911.....					23,784,969	827,717		
1912.....					35,763,476	1,597,554		
1913.....			33,000	1,537	37,626,899	1,753,037	2,804	131
1914.....			88,985	4,983	36,289,845	1,625,422	47,920	2,146
1915.....	40,401	2,262			45,377,084	2,541,116	810,000	45,360
1916.....	698,760	59,485	685,932	58,393	39,157,701	3,333,496	955,222	81,318
1917.....	1,378,001	153,468	1,586,711	176,712	29,483,725	3,283,602	127,844	14,238
1918.....	2,110,059	195,180	1,684,366	155,804	47,594,328	4,402,475	9,249	856
1919.....	2,280,000	158,825	1,487,586	103,625	40,060,113	2,790,587		
1920.....	905,472	80,949	2,255,520	201,643	32,702,725	2,931,670		
1921.....	595,881	34,215	3,312,493	19,203	60,298,603	3,462,346	2,472,615	141,978
1922.....			2,890,397	180,216	87,093,266	5,430,265	3,323,508	207,221
1923.....	520,041	37,334	4,401,494	315,983	99,541,818	7,146,107	6,771,113	486,098
Totals.....	9,874,307	776,511	21,845,696	1,567,185	1,228,392,290	67,440,606	14,520,275	979,346

Table 68.—Shipments of Lead Ores and Concentrates from Canadian Mines in 1923

	Lead ores	Lead concentrates	Dry ores
Tons shipped.....	40,614	31,440	684
Reported value of shipments..... \$	1,893,393	2,432,145	69,598
Metal Content of Shipments—			
Gold.....fine ounces.	227	911	29
Silver.....“	2,660,677	1,079,026	125,082
Lead.....pounds	23,324,226	37,670,095	59,866
Zinc.....“	5,242,565	3,475,553	600

Many of the ores of British Columbia contain both lead and zinc. Thus, in addition to the quantities noted in the above table there was 57,551,572 pounds of lead contained in zinc ores so termed because zinc was the predominating metal. Most of such shipments were from the Sullivan mine of the Consolidated Mining and Smelting Company.

Previous to 1904 lead ores mined in Canada were either exported as ore or smelted in Canadian furnaces and exported in the form of base bullion for refining. A lead refinery employing the Betts electrolytic process has been in operation at Trail, B.C. since 1904, treating the product from lead blast furnaces.

The production of refined lead at Trail amounted in 1923 to 47,971 tons, as against 39,276 tons in 1922; 28,820 tons in 1921 and 13,237 tons in 1920.

The Kingdon Mining, Smelting and Manufacturing Company, Limited, which is now smelting ores from the Kingdon mine at Galetta, Ont., has been in operation since early in 1919, producing a high grade of pig lead.

Table 69.—Refined Lead Produced in Canada,\* 1904-1923

Year	Pounds of refined lead produced	Year	Pounds of refined lead produced	Year	Pounds of refined lead produced
1904.....	7,519,440	1910.....	32,987,508	1917.....	32,115,114
1905.....	15,804,509	1911.....	23,525,050	1918.....	31,571,112
1906.....	20,471,314	1912.....	35,893,190	1919.....	34,330,920
1907.....	26,607,461	1913.....	37,923,043	1920.....	28,720,030
1908.....	36,549,274	1914.....	36,443,706	1921.....	60,949,793
1909.....	41,883,614	1915.....	43,518,618	1922.....	81,412,716
		1916.....	33,087,474	1923.....	101,096,312

\*Includes the electrolytic lead produced from Canadian and foreign ores at Trail, B.C., and also the pig-lead from Galetta, Ont.

**Exports and Imports.**—Imports of lead and lead manufactures have gradually increased both in quantity and value during the past three years, and in 1923 were valued at \$672,609. The exports which in 1923 consisted of pig lead to the extent of some 47 million pounds and lead in ore amounting to nearly 8 million pounds, showed an increase of more than 2.5 million pounds over the export figures for the previous year.

Table 70.—Imports into Canada and Exports of Lead, 1921, 1922 and 1923

	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Old and scrap, pig and block.....	1,781,230	87,228	2,001,987	105,527	2,751,455	145,094
Bars and sheets.....	236,696	15,411	283,612	17,957	407,840	31,321
Litharge.....	1,650,500	131,009	1,514,400	122,592	1,672,100	160,928
Acetate and nitrate of lead.....	171,561	18,471	217,487	20,330	179,881	17,727
Other manufactures.....		140,948		199,330		199,793
Pipe lead.....	72,238	5,026	96,716	6,458	85,351	6,568
Shots and bullets.....	14,152	1,081	10,324	4,173	10,705	1,255
Tea lead.....	140,259	12,586	225,729	21,530	215,345	19,622
Lead pigments:—						
Dry white lead.....	16,027	1,533	190,472	14,255	49,579	4,273
White lead, ground in oil.....	48,424	5,123	56,760	6,001	117,034	9,518
Dry red lead and orange mineral.....	795,275	68,486	966,846	74,921	867,759	76,510
<b>Total.....</b>		<b>486,902</b>		<b>593,074</b>		<b>672,609</b>
<b>EXPORTS—</b>						
Lead in ore.....	6,253,700	256,834	10,941,800	550,088	7,948,100	535,937
Pig-lead.....	23,779,700	992,485	41,481,900	1,877,050	47,144,500	2,496,207
<b>Total.....</b>	<b>30,033,400</b>	<b>1,249,319</b>	<b>52,423,700</b>	<b>2,427,138</b>	<b>55,092,600</b>	<b>3,032,144</b>

## QUEBEC

Lead production in the province of Quebec dates from the year 1915 when some 40,000 pounds was produced, all of which was derived from the lead-zinc deposits of Notre Dame des Anges. The maximum output of 2.25 million pounds was made in 1919, due to the demands for lead during the war. During 1922 there was no production from these mines, but in 1923 shipping was resumed and it was estimated that 520,041 pounds was recovered from the ores exported to United States smelters.

## ONTARIO

Production of lead in Ontario was carried on many years ago in Frontenac county, but it was not until 1913 that any statistical records were kept. During that year 33,000 pounds of lead was recovered; the deposits in Carleton county were opened up and during the war period they were rapidly developed. The total Ontario production now comes from Galetta in Carleton county, where the Kingdon Mining, Smelting and Manufacturing Company operates its mine, mill and smelter. During 1923 the production records from this plant were the highest yet attained and 4,315,634 pounds of lead was recovered. Including a small quantity contained in cobalt ores exported to the United States, the total lead production for Ontario amounted to 4,401,494 pounds valued at \$315,983 for the year.

## BRITISH COLUMBIA

The production of lead in British Columbia is derived from the zinc-lead ores of the East and West Kootenays. During 1923, the smelter production from British Columbia ores amounted to 99,541,818 pounds valued at \$7,146,107, which included the pig lead recovered in the treatment of Canadian ores in Canada and the quantities estimated as recovered from Canadian lead ores exported. Compared with the output in 1922, when the production amounted to 87,093,266 pounds valued at \$5,430,265, there was an increase of 14.3 per cent in quantity and 31.6 per cent in value.

**Prices.**—During 1923 the price of lead reached its highest point in March when 8.252 cents was quoted as the monthly average on the New York market. The price gradually declined and at midsummer stood at 6.237 cents; there was a slight recovery towards the end of the year, quotations rising to 7.369 cents in December. The *Engineering and Mining Journal-Press* (1) had the following to say regarding the lead situation:—

"Lead (October, 1923) is in an excellent statistical position. It is interesting to make a comparison of the lead and copper situation, as it brings out the underlying reason for the continued low price of copper. There are several explanations for this peculiar circumstance. In the first place, the world's lead production did not show a great jump during the war and after. Furthermore, the lead market was not plagued with exceedingly heavy stocks of surplus and second-hand metal after the armistice. Then again, the lead market is protected by a 2½c. tariff. Another reason is that lead is insistently called for by European countries, whereas copper is not so much in demand as it should be.

Lead producers for the last two years have been able to benefit by the flourishing condition of two great American industries—building and automobile manufacturing. The building trades use large amounts of lead in paints and pipe, and every new automobile has a storage battery with lead plates. Incidentally, the storage battery business received a strong impetus from the demand for radio apparatus. Lead enters into the composition of so many useful articles from such minor uses, as in the small weights inserted in the lining of women's garments and the wrapping of chewing gum to the manufacture of ammunition, that the market has at all times an exceptionally diversified consumption, which is much in its favour. Compare this with the situation in zinc and the contrast is striking. Zinc producers are chiefly dependent upon two outlets for their production, the galvanizing industry and the brass and alloy manufacturers. When these two branches refrain from buying the market is severely depressed.

Stocks of lead in the United States are small and practically negligible as a market element. Domestic production is at the rate of about 38,000 tons of pig lead per month. American consumption is taking all of it."

**Table 71.—Monthly Average Prices of Lead in Montreal, New York and London, 1921, 1922 and 1923**

Month	Montreal—cents per pound			New York—cents per pound			London—in £ Sterling per ton of 2,240 pounds		
	1921	1922	1923	1921	1922	1923	1921	1922	1923
January.....	6.093	6.152	7.245	4.821	4.700	7.633	£ s. d. 23 13 3	£ s. d. 23 13 4	£ s. d. 27 2 4
February.....	5.683	5.897	7.561	4.373	4.700	8.050	20 8 9	20 13 8	28 10 4
March.....	5.377	5.930	7.798	4.084	4.720	8.252	18 20 11	21 5 4	28 16 3
April.....	5.404	5.908	7.243	4.356	5.115	8.101	20 17 6	22 19 10	26 19 1
May.....	6.021	6.139	6.841	4.952	5.420	7.306	23 0 0	24 9 3	25 12 3
June.....	5.795	6.190	6.760	4.485	5.745	7.146	22 7 2	24 13 8	25 8 7
July.....	5.75	6.235	6.480	4.410	5.729	6.237	23 6 5	24 17 4	24 3 9
August.....	5.571	6.226	6.593	4.382	5.824	6.582	23 6 6	24 11 7	24 4 5
September.....	5.588	6.178	6.865	4.600	6.110	6.856	22 19 0	24 2 7	25 13 9
October.....	5.581	6.235	7.205	4.690	6.530	6.831	23 12 2	25 11 0	27 16 3
November.....	5.820	6.775	7.682	4.683	7.047	6.846	24 4 2	26 3 11	30 7 0
December.....	6.223	6.957	7.870	4.700	7.163	7.369	24 16 9	26 1 7	31 0 10
<b>Average.....</b>	<b>5.742</b>	<b>6.235</b>	<b>7.179</b>	<b>4.545</b>	<b>5.734</b>	<b>7.267</b>	<b>22 6 7</b>	<b>24 1 11</b>	<b>27 2 11</b>

(1) Page 744, vol. 116, no. 17, October, 27, 1923.

Table 72.—World's Production of Lead, 1913, 1919-1923

(From the Year Book of the American Bureau of Metal Statistics, 1922 and 1923)

(Short tons)

Country	1913	1919	1920	1921	1922	1923
<b>NORTH AMERICA—</b>						
United States.....	435,665	454,797	476,125	402,479	470,000	530,000
Canada.....	18,822	21,903	18,187	34,381	45,842	53,899
Mexico.....	68,324	86,667	93,925	66,851	133,180	184,242
<b>Total North America.....</b>	<b>522,811</b>	<b>563,367</b>	<b>588,237</b>	<b>503,711</b>	<b>649,022</b>	<b>768,141</b>
<b>SOUTH AMERICA—</b>						
Argentina.....		4,369	3,857	2,756	3,986	4,000
Other South America.....	2,729	2,865	3,047	2,385	2,718	2,500
<b>Total South America.....</b>	<b>2,729</b>	<b>7,234</b>	<b>6,904</b>	<b>5,141</b>	<b>6,704</b>	<b>6,500</b>
<b>EUROPE—</b>						
Austria.....	26,558	1,944	4,379	3,689	4,106	4,690
Belgium.....	59,056	4,656	17,681	32,793	48,032	56,328
France.....	31,756	12,043	13,224	17,058	15,432	15,432
Germany (including Upper Silesia).....	207,176	56,753	65,036	82,673	79,366	56,064
Greece.....	20,177	4,233	5,547	6,140	4,853	4,667
Italy.....	23,885	18,216	17,578	13,763	11,960	18,885
Czecho-Slovakia and Jugo-Slavia.....		9,663	7,367	7,725	11,821	13,448
Poland (Upper Silesia excluded).....	2,976		1,653	1,113	1,102	2,205
Russia.....	1,678					
Spain.....	219,110	138,545	138,890	135,583	106,923	121,253
Sweden.....	1,361	1,004	991	616	418	220
United Kingdom.....	20,304	11,506	12,275	2,727	5,551	7,512
<b>Total Europe.....</b>	<b>614,037</b>	<b>258,563</b>	<b>284,621</b>	<b>303,880</b>	<b>289,564</b>	<b>300,704</b>
<b>ASIA—</b>						
Turkey.....	15,318	1,102	1,102	9,199	5,952	1,543
India (Burma).....	6,535	20,747	26,679	37,737	43,919	51,239
Japan.....	4,162	6,360	4,607	3,459	3,570	3,307
<b>Total Asia.....</b>	<b>26,015</b>	<b>28,209</b>	<b>32,388</b>	<b>50,395</b>	<b>53,441</b>	<b>56,089</b>
<b>Australia.....</b>	<b>126,207</b>	<b>92,654</b>	<b>7,642</b>	<b>63,071</b>	<b>118,064</b>	<b>137,513</b>
<b>AFRICA—</b>						
Rhodesia.....		14,171	16,353	19,808	22,962	12,546
Tunis.....		11,380	12,574	13,911	14,457	15,754
<b>Total Africa.....</b>		<b>25,551</b>	<b>28,927</b>	<b>33,719</b>	<b>37,419</b>	<b>28,300</b>
<b>Grand Total.....</b>	<b>1,291,799</b>	<b>975,578</b>	<b>948,719</b>	<b>959,917</b>	<b>1,154,214</b>	<b>1,297,247</b>

\*Dominion Bureau of Statistics reports the Canadian production of Lead as follows: 1913—18,831 tons; 1919—21,914 tons; 1920—17,977 tons; 1921—33,340 tons; 1922—46,653 tons; 1923—55,617 tons.

## MERCURY

There has been no production of mercury recorded since 1897. The small production reported in 1895, 1896, and 1897, was derived from the deposits at the western end of Kamloops Lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar, in a zone of decomposed tertiary volcanic rocks.

Mercury has also been reported as occurring in ores of the Cobalt district, and in the neighbourhood of Field, B.C., and Sechart, on the west coast of Vancouver Island.

The Kerr Lake Mines, Limited, of Cobalt, Ont., in its annual report to the shareholders, reported recoveries of mercury amounting to 545.5 pounds in 1918, and 137.5 pounds in 1919. The imports of mercury into Canada during 1923 were 135,953 pounds, valued at \$95,922, as against 59,296 pounds valued at \$47,742 in 1922.

Table 73.—Production of Mercury in Canada, 1895-1923

Year	Flasks	Price per flask	Total Value
1895.....	71	\$ 33-00	\$ 2,343
1896.....	58	33-44	1,940
1897.....	9	36-00	324
1898-1923.....			

Table 74.—Imports into Canada of Mercury, 1921, 1922 and 1923

Year	Pounds	Value
1921.....	30,894	\$ 20,570
1922.....	59,296	47,742
1923.....	135,953	95,922

Table 75.—Monthly Average Price of Mercury, 1921, 1922 and 1923

(At New York, Per Flask of 75 pounds)

Month	1921	1922	1923
	\$	\$	\$
January.....	48.440	49.960	72.731
February.....	49.545	48.295	70.636
March.....	46.796	50.204	70.808
April.....	45.423	52.280	69.200
May.....	47.000	54.885	68.000
June.....	46.846	55.115	67.769
July.....	44.950	55.000	66.980
August.....	45.028	57.593	65.212
September.....	42.660	67.640	63.000
October.....	39.840	72.560	61.769
November.....	39.804	71.521	61.917
December.....	49.212	72.300	60.000
Average.....	45.462	58.946	66.502

## MOLYBDENUM

There has been no production of molybdenite in Canada since 1919.

The war stimulated the demand for molybdenum ores to a considerable extent, but with the cessation of hostilities, the producers were left with considerable stocks on hand which could not very readily be absorbed in peace times with the limited uses for the metal, apart from the making of ferro-molybdenum. The price declined accordingly to as low as 40 to 50 cents per pound for forced sales.

A few companies carried on development work during 1919 and 1920 but the only producer in 1919 was the Dominion Molybdenite Company, Limited, operating the property at Quyon, Que., for part of the year only.

The ore produced has been chiefly low-grade material carrying less than 2 per cent  $\text{MoS}_2$  but included small quantities of ore running from 2 to 15 per cent  $\text{MoS}_2$  and some higher grade hand-picked material.

All the ore produced in Canada has been concentrated in Canadian mills erected for the purpose, and has been marketed either as concentrates, molybdic acid, ammonium molybdate, or as ferro-molybdenum for the manufacture of which two electric furnace plants were established and operated during 1916, 1917, and 1918.

There has been no production of ferro-molybdenum since February, 1918.

There are molybdenite deposits in Nova Scotia, Quebec, Ontario, Manitoba, and British Columbia. The principal production has come from the Quyon mine, in Pontiac county, Quebec.

**Prices.**—The market quotation for molybdenum ore, 85 per cent  $\text{MoS}_2$  in January, 1923, was 70 cents per pound of contained sulphide and in June, 75 to 85 cents per pound. By the end of the year the price stood at 80 cents.

Table 76.—Production of Molybdenite in Canada, 1902-1923

Year	Ores mined	Ores treated	Ores and concentrates shipped		MoS <sub>2</sub> Content of shipments	MoS <sub>2</sub> production (probable recovery)	
	Tons	Tons	Tons	Value (a)	Pounds	Pounds	Value (b)
1902.....	3		3.3	\$ 400	(c)	(c)	(c)
1903.....	600		85.0	1,275	(c)	(c)	(c)
1904-1913.....							
1914.....	166		16.5	2,063	3,814	3,814	\$ 2,063
1915.....	2,242	216	39.0	28,920	29,210	29,210	28,450
1916.....	13,522	9,106	610.0	188,316	156,461	156,461	156,461
1917.....	26,871	22,605	1,554.3	320,006	330,316	288,705	288,705
1918.....	34,030	33,935	461.3	428,807	378,482	378,029	434,733
1919.....	7,280	6,783	46.0	69,203	83,002	83,002	69,203
1920-1923.....							

(a) Value as given by the operators.  
(c) No figures available.

(b) Estimated at the average market value of molybdenite.

## NICKEL

Despite the low prices for the nickel during 1923, the industry made steady progress towards a recovery from the depression observed during the previous year. Improvement in the price of copper was of considerable benefit. The total production for 1923 while below that for the war years 1915 to 1918 inclusive, was much above that of any other period prior to the former year and amounted to 62,453,843 pounds which at the average New York price of 29.353 cents per pound was valued at \$18,332,077 as against 17,597,123 pounds valued at \$6,158,993 in 1922 when the average price was 35 cents per pound. Of the 1923 total, 396,008 pounds was recovered in the treatment of silver-cobalt ores.

During the year, 1,187,355 tons of nickel-bearing ore was mined in the Sudbury district. The smelters treated 1,140,160 tons and produced 58,084 tons of matte carrying 31,028.9 tons of nickel and 15,769.8 tons of copper. In 1922 the nickel-copper ore mined amounted to 259,569 tons, and smelted, 314,120 tons, from which was produced 17,324 tons of bessemer matte carrying approximately 8,677.5 tons of nickel and 5,420.8 tons of copper.

The average metal recovery in matte from ore treated in 1922 was 2.44 per cent nickel and 1.72 per cent copper; in 1923 the recoveries were 2.72 per cent nickel and 1.38 per cent copper.

Table 77.—Production of Nickel in Canada, 1889-1923

Year	Pounds of nickel	Cents per pound	Value	Year	Pounds of nickel	Cents per pound	Value
			\$				\$
1889.....	830,477	60	498,286	1908.....	19,143,111	43	8,231,538
1890.....	1,435,742	65	933,232	1909.....	26,282,991	36	9,461,877
1891.....	4,035,347	60	2,421,208	1910.....	37,271,033	30	11,181,310
1892.....	2,413,717	58	1,399,956	1911.....	34,098,744	30	10,229,623
1893.....	3,982,982	52	2,071,151	1912.....	44,841,542	30	13,452,463
1894.....	4,907,430	38½	1,870,958	1913.....	49,676,772	30	14,903,032
1895.....	3,888,525	35	1,360,984	1914.....	45,517,937	30	13,655,381
1896.....	3,397,113	35	1,188,990	1915.....	68,308,657	30	20,492,597
1897.....	3,997,647	35	1,399,176	1916.....	82,958,564	35	29,035,497
1898.....	5,517,690	33	1,820,838	1917.....	84,330,280	40	33,732,112
1899.....	5,744,000	36	2,067,840	1918.....	92,507,293	40	37,002,917
1900.....	7,080,227	47	3,327,707	1919.....	44,544,883	40	17,817,953
1901.....	9,189,047	50	4,594,523	1920.....	61,335,706	40	24,534,282
1902.....	10,693,410	47	5,025,903	1921.....	19,293,060	35	6,752,571
1903.....	12,505,510	40	5,002,204	1922.....	17,597,123	35	6,158,993
1904.....	10,547,883	40	4,219,153	1923.....	62,453,845	29.353	18,332,077
1905.....	18,876,315	40	7,550,526				
1906.....	21,490,955	42	8,948,834				
1907.....	21,189,793	45	9,535,407				
				<b>Total.....</b>	<b>941,885,349</b>		<b>340,211,099</b>

## PRODUCTION OF NICKEL IN CANADA 1889-1922

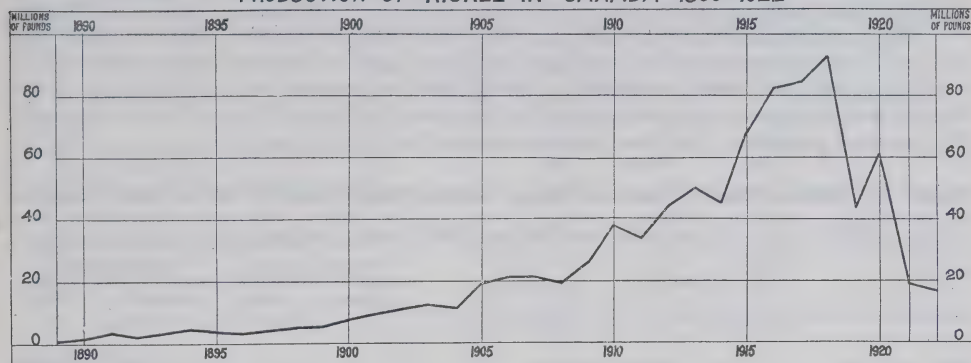


Table 78.—Proportion of Nickel and Copper in Sudbury Matte, 1912-1923

Year	Percentage		
	Nickel	Copper	Total
1912.....	53.5	26.3	79.8
1913.....	52.7	27.4	80.1
1914.....	49.0	31.1	80.1
1915.....	50.3	29.0	79.3
1916.....	51.6	28.0	79.6
1917.....	50.6	26.9	77.5
1918.....	52.6	26.0	78.6
1919.....	51.6	28.3	79.9
1920.....	52.7	27.6	80.3
1921.....	49.4	32.4	81.8
1922.....	50.1	31.3	81.4
1923.....	53.4	27.2	80.6

Monel metal, produced directly from nickel-copper matte by the International Nickel Company at its plant at Huntington, N.J., consists of about one-third copper and two-thirds nickel, with not more than 3.5 per cent of iron to add tensile strength. The ability to resist the corrosive action of acids and other solutions which readily attack steel has given this metal importance in many lines of manufacturing. Monel metal is not now produced in Canada, and the matte used for this purpose is shipped directly to the Huntington plant.

The following excerpt is from a recent publication by Frank L. Hess of the United States Geological Survey <sup>(1)</sup>.

"In 1922, for practically the first time in many years, nickel refined in Europe was seen in the United States, when the Mond Nickel Company of England established an agency here for the sale of its metal, refined by the carbonyl process and advertised as '99 per cent pure' and free from cobalt. The electrolytically refined nickel is, however, claimed to run 99.8 per cent of nickel (including 0.45 per cent of cobalt) with about 0.1 per cent of iron and 0.1 per cent of copper. The Mond Nickel Company has taken over a steel plant at Hyde, two miles from Clearfield, Pa., that will be used for manufacturing nickel in various forms. The American branch is known as the American Nickel Corporation. The company is putting out a synthetic alloy which it at first called 'Corronel' but now calls 'Mond metal' and which is rather similar in composition to monel metal. Mond metal is said to contain 70 per cent of nickel, 2 to 3 per cent of manganese, about 1 per cent of impurities, and the remainder copper. The American Nickel Corporation has begun making seamless and welded nickel tubes and fittings."

**Refineries.**—The refinery erected at Port Colborne, Ontario, by the International Nickel Company of Canada, Limited, which started operations in July, 1918, was the first to produce refined nickel in Canada from Sudbury ores. This plant was idle throughout most of the year 1921, but was re-opened about the middle of 1922, and was operated throughout 1923. The International Nickel Company formerly exported some of its matte to its plant at Bayonne, N.J., but this plant was dismantled during the early part of 1922. The British America Nickel Corporation refinery at Deschernes, Quebec, which was not operated during 1923, also produces refined nickel and copper. The residues containing the precious metals are exported for treatment. The matte produced by the Mond Company in 1923 was all exported to Swansea, Wales, for further treatment.

(1) Mineral Resources of the United States 1922 pp. 563-564.

The production from the refineries in 1923 was (a) metallic nickel, 23,203,741 pounds (11,601.8 tons) valued at \$4,553,228 and (b) nickel oxides 11,377,086 pounds valued at \$1,658,909.

The corresponding figures for the year 1922 which refer to the Port Colborne plant only were (a) 11,065,473 pounds valued at \$3,140,399 and (b) 2,389,840 pounds valued at \$1,852,727.

There was also a small production of nickel from the silver-cobalt-nickel smelters, in the form of metallic nickel, nickel oxides, mixed or unseparated oxides and the sulphate of the metal. The record of production from these plants is shown in the following table:—

**Table 79.—Sales of Nickel from the Silver-Cobalt-Nickel Smelters of Southern Ontario**

Year	Metallic Nickel		Nickel-Oxides*	
	Pounds	Value	Pounds	Value
		\$		\$
1912.....			91,377	9,137
1913.....			268,304	30,122
1914.....			392,512	34,883
1915.....	55,325	22,130	†282,025	31,262
1916.....	79,360	31,538	†555,868	101,358
1917.....	265,896	108,234	†657,549	122,963
1918.....	243,186	88,720	†962,309	215,277
1919.....	397,884	137,435	†340,389	32,862
1920.....	204,537	71,287	†24,112	6,312
1921.....	10,973	3,442	†105,535	4,034
1922.....	106,318	31,035	†37,317	3,952
1923.....	33,593	10,075	71,484	9,246

\*Does not include mixed oxides of cobalt and nickel. See Table 35.

†Nickel-sulphate included with nickel oxides.

The total estimated nickel content of the compounds recovered by these silver smelters of Ontario from the treatment of silver-cobalt-nickel ores was somewhat greater than as shown above, including in addition a small quantity of nickel contained in residues exported and some in unseparated oxides. The total production in 1923 was 396,008 pounds as against 242,067 pounds in 1922 and 36,160 pounds in 1921.

**Prices.**—The average price of electrolytic nickel in New York during 1921 according to quotations published by the "*Engineering and Mining Journal-Press*" was 44 cents per pound for ingots and 41 cents for shot. Quotations were merely nominal owing to the depressed state of the market. During 1922 nickel was being increasingly used for new purposes. Whereas, prior to and during the war a very large proportion of the metal was consumed by armament manufacturing, the cessation of war activities followed by the Washington conference on the limitation of armaments, led the producers to investigate new outlets for nickel. These have been found in part in the adaptability of nickel for the cooking-utensil trade, resistance wires in electrical heating appliances, coinage, alloys, and the growing importance of the metal in the motor car industry. This consumption coupled with a much lower price has been the important factor in the renewed activity. The average price was 35 cents per pound in 1922 and 29.3 cents in 1923.

Table 80.—Imports into Canada and Exports of Nickel 1921, 1922 and 1923

	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Nickel, nickel silver and German silver, in ingots or blocks, n.o.p.	770	421	42,286	13,257	35,045	12,410
Nickel in bars and rods, strips, sheets and plates	41,099	21,432	937,483	143,675	492,177	153,564
Nickel silver and German silver, in bars, rods, strips, sheets, plates or anodes	330,420	125,874	386,764	100,730	298,902	82,407
German, Nevada and nickel silver, manufactures of, not plated		262,250		203,838		207,242
Nickel-plated household hollow-ware				25,849		32,656
Nickel-plated ware, n.o.p.		1,279,501		1,314,688		1,240,762
<b>Total Nickel and its Products</b>		<b>1,689,478</b>		<b>1,802,037</b>		<b>1,729,041</b>
<b>EXPORTS—</b>						
Nickel, fine, contained in ore, matte or speiss	8,064,600	1,418,490	16,768,200	2,536,347	28,971,000	4,077,000
Nickel, fine	4,794,500	1,684,454	14,449,700	4,287,941	22,897,900	4,649,251
<b>Total</b>	<b>12,859,100</b>	<b>3,102,944</b>	<b>31,217,900</b>	<b>6,824,288</b>	<b>51,868,900</b>	<b>8,726,251</b>

## PLATINUM AND PALLADIUM

The most important sources of the metals of the platinum group in Canada are the nickel-copper ores of Sudbury, Ontario, but due to the fact that these metals occur in very small quantities per ton of ore and also that their recovery could only be made in the refining of the copper and nickel, the bulk of the Canadian platinum from this source has been recovered in foreign countries. It was not until 1918, when the International Nickel Company of Canada built its refinery at Port Colborne, that these metals were recovered in Canada. The British America Nickel Corporation Limited, opened its large refinery at Deschenes, Quebec, the following year. In both these plants, the precious metals are recovered as residues which are exported for further treatment. The mattes produced by the Mond Nickel Company which have all been treated in Swansea, Wales, are supposed to have a much richer content of platinum and its associated metals, but as yet no certified returns as to the precious metal content of its mattes have ever been received from this company.

For many years there has been a more or less regular recovery at the New Jersey plant of the International Nickel Company of metals of the platinum group from residues obtained in the refining of the Sudbury Nickel copper mattes; but as residues from other sources were treated with those of Canadian ores, the total recovery could not be regarded as of Canadian origin; nevertheless, it is believed that the Sudbury mattes have been the source of by far the greater part of the platinum group metals recovered. This New Jersey plant operated for a month or two only during 1922 and was then dismantled.

Platinum is also found in the alluvial sands of British Columbia, but the output which up to the present has been won by individual placer operators, is of small importance.

The recorded production during the year 1923 was as follows: International Nickel Company and British America Nickel Corporation refineries, 1,210 fine ounces platinum, 1,732 fine ounces of palladium and 304 fine ounces of rhodium, and iridium combined. The British Columbia placers produced 7 fine ounces of platinum. The total for Canada during 1923 amounted to 1,217 fine ounces of platinum worth \$141,826; 1,732 fine ounces of palladium valued at \$138,560; and 304 fine ounces of the combined rhodium, and iridium valued at \$45,000. The values per ounce used were the average quotations for the year viz., \$116.537 for platinum; \$80 for palladium; and \$90 for rhodium and \$270 for iridium.

Table 81.—Summary of Platinum Statistics, 1922 and 1923

	1922			1923		
	Platinum	Palladium	Rhodium, etc.	Platinum	Palladium	Rhodium, etc.
Produced by Canadian and United States refineries from Canadian mattes and resi- dues, ..... Fine ozs. Value	458 \$44,709	724 \$47,060	391 \$31,280	1,210 \$141,010	1,732 \$138,560	304* \$45,000
British Columbia placers ..... Fine ozs. Value	11 \$1,074	.....	1 \$80	7 \$816	.....	.....
<b>Total for Canada..... Fine ozs Value</b>	<b>(a) 469 \$45,783</b>	<b>(b) 724 \$47,060</b>	<b>(c) 392 \$31,360</b>	<b>1,217 \$141,826</b>	<b>1,732 \$138,560</b>	<b>304 \$45,000</b>

(a) includes 282 ounces Platinum

(b) includes 383 ounces Palladium

(c) includes 266 ounces of others

\*206 oz. Rhodium valued at \$18,540 and 98 oz. Iridium valued at \$26,460.

} Produced but not reported prior to 1922.

Table 82.—Production of Platinum in Canada from Alluvial Sands, 1887-1923

Year	Value	Year	Value	Year	Crude Ounces	Value
	\$		\$			\$
1887.....	5,600	1897.....	1,600	1913.....	18	489
1888.....	6,000	1898.....	1,500	1914.....	.....	.....
1889.....	3,500	1899.....	825	1915.....	23	1,063
1890.....	4,500	1900.....	.....	1916.....	15	600
1891.....	10,000	1901.....	457	1917.....	57	3,823
1892.....	3,500	1902.....	190	1918.....	39	2,506
1893.....	1,800	1903.....	.....	1919.....	25	2,105
1894.....	950	1904.....	420	1920.....	17	791
1895.....	3,800	1905.....	500	1921.....	23	1,558
1896.....	750	1906.....	.....	1922.....	12	1,154
		1907-1912.....	.....	1923.....	7	816

Table 83.—Recovery at the International Nickel Company's Works\*—New Jersey, U.S.A., 1907-1922

Year	Matte treated	Gold	Silver	Platinum	Palladium	Rhodium	Others
	Tons	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
1907.....	17-840	993-572	63,400-70	226-800	607-300	(a)	.....
1908.....	18-839	5,238-181	139,329-29	172-316	328-287	(a)	.....
1909.....	18-407	2,113-669	63,138-66	546-627	1,270-598	(a)	.....
1910.....	24-309	2,649-799	60,256-83	258-325	522-804	(a)	.....
1911.....	26-840	2,203-052	70,954-38	655-552	753-363	(a)	.....
1912.....	27-653	2,476-558	62,169-66	496-850	680-130	(a)	.....
1913.....	38-733	2,336-405	77,924-03	192-863	207-713	191-067	.....
1914.....	40-267	2,695-957	75,928-18	748-440	756-360	515-801	.....
1915.....	31-428	3,444-785	101,793-17	452-430	543-240	57-475	.....
1916.....	56-405	3,495-123	110,285-21	1,016-581	1,344-915	257-070	.....
1917.....	59-209	1,954-934	92,963-67	970-695	1,354-459	325-407	.....
1918.....	62-250	1,968-703	107,076-78	649-737	786-654	472-579	.....
1919.....	19-528	634-043	35,689-79	616-716	762-217	227-294	(b) 76-613
1920.....	30-740	613-338	81,882-78	488-901	739-158	390-336	(b) 102-363
1921.....	(c) 2,217-000	6-901	1,242-74	281-582	382-626	256-110	(b) 10-655
1922.....	(c) 3,112-000	206-542	12,211-66	137-882	300-839	103-874	(b) 20-563

\*Plant dismantled during 1922.

(a) Figures not given separately.

(b) Includes Osmium, Iridium and Ruthenium.

(c) These quantities bear no relation to the amounts of precious metals recovered.

Platinum is also recovered in a small way at the Royal Mint in the form of platinum black, a dull black powder of metallic platinum, which is obtained from the treatment of dental and old jewellery scrap. The following table shows the recoveries since 1919.

**Table 84.—Recovery of Platinum Black, Iridium Precipitate, and Palladium at the Royal Mint, Ottawa, 1919-1923**

Year	Platinum		Iridium		Palladium	
	Ozs. gross	Value	Ozs. gross	Value	Ozs. gross	Value
1919.....	29.281	\$ 2,711.59	20.782	\$ 2,268.12	0.696	\$ 87.00
1920.....	7.220	\$ 400.56				
1921.....	18.843	\$ 1,160.73				
1922.....	12.386	\$ 1,102.35				
1923.....	4.520	\$ 393.47				

**Table 85.—Imports into Canada and Exports of Platinum, 1921, 1922 and 1923**

Item	1921		1922		1923	
	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Crucibles.....		6,198		3,976		10,177
Wire and bars, strips, sheets or plates.....		84,011		91,425		117,607
Retorts, pans, condensers, etc.....		4,342		887		40,471
<b>Total .....</b>		<b>94,551</b>		<b>96,288</b>		<b>168,255</b>
<b>EXPORTS—</b>						
Jewellers sweepings.....		229,525		216,118		274,467
Ores and concentrates.....	876	63,380	35	3,626	349	33,838
Old and scrap.....	304	18,931	151	13,328	126	8,988
<b>Total.....</b>		<b>311,836</b>		<b>233,072</b>		<b>317,293</b>

**Table 86.—Monthly Average Prices of Platinum, 1921, 1922 and 1923**

(From the *Engineering and Mining Journal-Press*, 1923)

(In dollars per fine ounce.)

Month	1921	1922	1923
	\$	\$	\$
January.....	73.400	97.260	112.462
February.....	70.227	89.545	113.273
March.....	72.463	87.500	110.846
April.....	73.404	87.500	116.840
May.....	73.740	85.529	115.007
June.....	74.942	87.212	115.615
July.....	70.440	90.180	116.000
August.....	73.222	98.370	116.000
September.....	75.960	117.280	116.000
October.....	81.800	109.440	116.923
November.....	82.609	108.000	124.479
December.....	78.192	113.600	125.000
<b>Average.....</b>	<b>75.033</b>	<b>97.618</b>	<b>116.537</b>

Prior to the war the world's supply of platinum was derived almost entirely from the Ural Mountains in Russia, but when hostilities commenced in the summer of 1914 the Russian production was reduced almost one-third. The subsequent internal troubles further crippled the platinum industry in that country and only a relatively small production has been made during the past few years. At the present time no large amount is being produced there, and it is doubtful if Russia can be counted on for any dependable supply in the near future. In view of the increasing consumption of platinum in jewelry and the shortage in the supply of the platinum metals, the following abstracts have been made from statistics of production, and consumption of these precious metals as published by the United States Geological Survey.

**Table 87.—Platinum Metals Consumed in the United States as Reported by Refiners and by Industries, 1922-23**

(In Troy Ounces)

(From *Mineral Resources of the United States, 1923-Part 1, Pages 9-22*).

Industry	Platinum	Iridium	Palladium	Others	Total	Percentage of total
<b>1922</b>						
Chemical.....	8,834	172	458	271	9,735	5
Electrical.....	24,988	1,537	2,735		29,260	16
Dental.....	11,651	83	5,535		17,269	10
Jewelry.....	108,527	2,598	9,852	1,190	122,157	67
Miscellaneous.....	2,838	1,064	636		4,538	2
<b>Total.....</b>	<b>156,838</b>	<b>5,444</b>	<b>19,216</b>	<b>1,461</b>	<b>182,959</b>	<b>100</b>
<b>1923</b>						
Chemical.....	8,637	190	485	266	9,578	5
Electrical.....	18,596	1,675	3,666		23,937	13
Dental.....	16,288	153	10,116		26,557	14
Jewelry.....	105,699	3,073	14,948	190	123,910	65
Miscellaneous.....	3,156	1,403	986	1,256	6,801	3
<b>Total.....</b>	<b>152,376</b>	<b>6,494</b>	<b>30,201</b>	<b>1,712</b>	<b>190,783</b>	<b>100</b>

**Table 88.—World's Production of Crude Platinum from Placers, 1914-1922**

(In Troy Ounces)

(From *Mineral Resources of the United States, 1923-Part I, Pages 9-22*).

Country (a)	1914	1915	1916	1917	1918	1919	1920	1921	1922
Australia—									
New South Wales (b).....	244	56	82	259	607	213	796	249	80
Papua (c).....	(c)	(c)	(c)	(c)	(c)	(c)	100	360	100
Tasmania (d).....	1,019	247	222	332	1,607	1,670	2,009	1,751	1,174
British India (e).....	37	18	9	4	(f)				
Canada (g).....	30	100	60	80	40	30	25	15	15
Columbia (h).....	17,500	18,000	25,000	32,000	35,000	35,000	35,000	35,500	40,000
Japan (i).....			70	127	51	155	258	231	(i)
Russia (h).....	241,200	124,000	63,900	50,000	25,000	30,000	35,000	20,000	22,000
Union of South Africa (k).....	(j)	(j)	(j)	(j)	(j)	(j)	(j)	510	762
United States.....	570	742	750	605	647	824	613	977	1,008

(a) In addition to the countries listed, Brazil exported 700 grams (23 ounces) in 1915.

(b) New South Wales Dept. Mines Ann. Repts.

(c) Territory of Papua Mines Dept. Rept. (production osmiridium, year ending June 30). Prior to 1920 annual production had not exceeded 10 ounces.

(d) Tasmania Dept. Mines Ann. Repts. (Tasmania production all osmiridium).

(e) India Geol. Survey Records.

(f) Production 0-31 ounce.

(g) Estimate by J. M. Hill: Canada Dept. Mines Ann. Repts. give the following figures (believed low): 1914, none; 1915, 23; 1916, 15; 1917, 57; 1918, 39; 1919, 25; 1920, 17; Dominion Bureau of Statistics: 1921, 23; 1922, 12.

(h) Estimate by J. M. Hill.

(i) Agricultural and commercial statistics of Japan.

(j) Data not available.

(k) Department Mines and Industry Ann. Rept. (osmiridium).

In addition to the above there is of course a considerable quantity of platinum recovered yearly from scrap and old material.

## SILVER

**SPECIAL NOTE.**—Prior to 1922, the method used in compiling the statistics on the silver production of Canada was to include, except for Ontario, the quantities of silver produced from Canadian ores either in Canadian or foreign smelters. For Ontario, the sales of silver bullion from the mines and smelters were considered as the year's production. In order to bring the practice for Ontario into harmony with that used in computing the silver output for the other provinces, adjustments amounting to 1,222,450 ounces were made for 1922 to take account of the stocks of silver bullion on hand at the end of 1921 which had not been previously included in the reports of the mineral production of Canada.

The production of silver from Canadian ores during 1923 amounted to 18,601,744 fine ounces which at the average price for the year of 64·873 cents an ounce, was valued at \$12,067,509 as against 18,626,439 fine ounces valued at \$12,576,758 for 1922, when the average price was 67·521 cents. There was thus, in 1923, a decrease of 0·1 per cent in quantity and slightly over 4 per cent in value, from the totals for 1922.

The production in 1923 included (a) silver contained in silver and gold bullion 9,472,908 fine ounces or 50·9 per cent of the total for Canada; (b) silver contained in blister copper and lead bullion, 3,892,837 fine ounces or 20·9 per cent and (c) silver estimated to have been recovered from ores etc., exported 5,235,999 fine ounces or 28·2 per cent.

The corresponding figures for 1922 were (a) which includes the adjustment mentioned above 10,077,909 fine ounces or 54·1 per cent (b) 3,572,554 fine ounces or 19·1 per cent and (c) 4,975,976 fine ounces or 26·8 per cent.

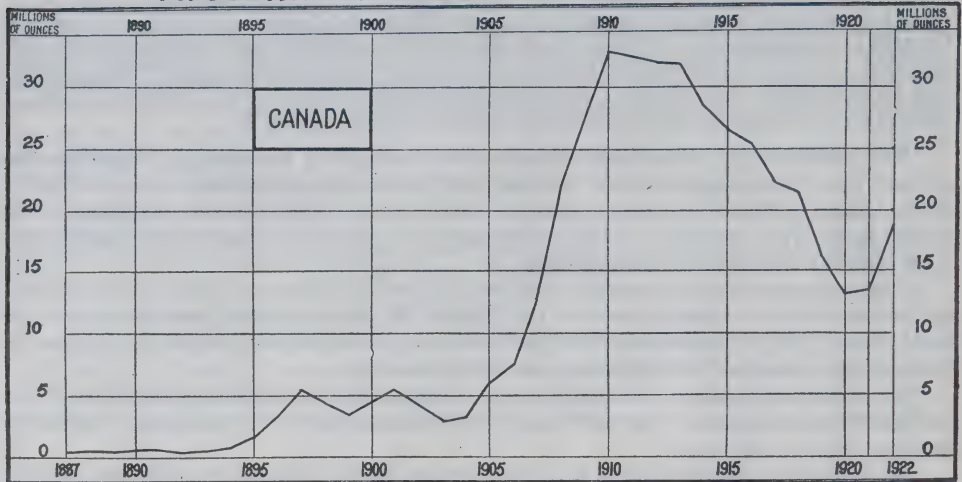
While the above figures show a slight decrease in Ontario's silver, the record for 1923 was considerably above that for the previous year, taking into account the adjustment of 1,222,450 fine ounces which was added in 1922.

Although no official statistics of the production of silver had been published prior to 1887, the annual reports of the operating companies showed that from 1869 to 1885 about four million ounces of silver with a probable value of \$4,800,000 was produced. The producing mines were situated in the Port Arthur district in Ontario. From 1887 to 1893 the production ranged in value between \$300,000 and \$400,000 and was derived chiefly from Ontario and Quebec. The next three years saw a rapid increase in production due to the development of the silver-lead deposits of British Columbia, and in 1896 a production of over \$2,000,000 was recorded. From that year until 1905 the production varied between \$2,000,000 and \$3,500,000 rising rapidly during the next six years to \$17,580,455 in 1910, as a result of the discovery of the rich ores of the Cobalt district. Since then there has been a falling-off in quantity, but owing to the higher price of the metal, the value of the annual production increased to a maximum of \$20,693,704 in 1918. It will be noticed in the table of production that the output for 1919 though only 50 per cent of that of 1910 or 1911, when the production was at its maximum, was more than equal in value.

Table 89.—Production of Silver in Canada, 1887-1923

Year	Ounces	Value	Cents per ounce	Year	Ounces	Value	Cents per ounce
		\$				\$	
1887.....	355,083	347,271	98·00	1906.....	8,473,379	5,659,455	66·79
1888.....	437,232	410,998	94·00	1907.....	12,779,799	8,348,659	65·33
1889.....	383,318	358,785	93·60	1908.....	22,106,233	11,686,239	52·86
1890.....	400,687	419,118	104·60	1909.....	27,529,473	14,178,504	51·50
1891.....	414,523	409,549	98·00	1910.....	32,869,264	17,580,455	53·49
1892.....	310,651	272,130	86·00	1911.....	32,559,044	17,355,272	53·30
1893.....	428,738	330,128	77·00	1912.....	31,955,560	19,440,165	60·83
1894.....	847,697	534,049	63·00	1913.....	31,845,803	19,040,924	59·79
1895.....	1,578,275	1,030,299	65·28	1914.....	28,449,821	15,593,631	54·81
1896.....	3,205,343	2,149,503	67·06	1915.....	26,625,960	13,228,842	49·68
1897.....	5,558,446	3,323,395	59·79	1916.....	25,459,741	16,717,121	65·66
1898.....	4,452,333	2,593,929	58·26	1917.....	22,221,274	18,091,895	81·417
1899.....	3,411,644	2,032,658	59·58	1918.....	21,383,979	20,693,704	96·772
1900.....	4,468,225	2,740,362	61·33	1919.....	16,020,657	17,802,474	111·122
1901.....	5,539,192	3,265,354	58·95	1920.....	13,330,357	13,450,330	100·900
1902.....	4,291,317	2,238,351	52·16	1921.....	18,543,198	8,485,355	62·654
1903.....	3,198,581	1,709,642	53·45	1922.....	18,626,439	12,576,758	67·521
1904.....	3,577,526	2,047,095	57·22	1923.....	18,601,744	12,067,509	64·873
1905.....	6,000,023	3,621,133	60·35				
				<b>Grand total.....</b>	<b>453,240,559</b>	<b>291,831,041</b>	<b>64·387</b>

## PRODUCTION OF SILVER IN CANADA 1887-1922.



Ontario has been the main producer of silver in Canada since the year 1906, its contribution increasing from 41 per cent of the total for Canada in 1905 to a maximum of 94 per cent in 1911. By 1914, it had fallen to 88.4 per cent and has been gradually decreasing each year reaching 25 per cent in 1921, rising again to 48.2 per cent in 1922, excluding the corrective figures mentioned as included, in the special note at the beginning of this chapter, and to 56.6 per cent in 1923.

The production of silver from British Columbia ores which has fluctuated between two and seven million ounces since 1896, accounted for 32.8 per cent of the total Canadian production in 1923.

The balance of the production, 10.3 per cent in 1923 as against 3.8 per cent in 1922 and 3.3 per cent in 1921 was derived from Manitoba and the Yukon Territory. This relatively large increase in the last three years, for these areas was due to the rich shipments of argentiferous galena from Keno Hill in the Yukon Territory, which in 1923 almost trebled the previous high record.

Table 90.—Production of Silver in Canada, by Provinces, 1887-1923\*

Year	Ontario		Quebec		British Columbia		Yukon Territory	
	Ounces	Value	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$		\$
1887.....	190,495	186,304	146,898	143,666	17,690	17,301	.....	.....
1888.....	208,064	195,580	149,388	140,425	79,780	74,993	.....	.....
1889.....	181,609	169,986	148,517	139,012	53,192	49,787	.....	.....
1890.....	158,715	166,066	171,545	179,436	70,427	73,666	.....	.....
1891.....	225,633	222,926	185,584	183,357	3,306	3,266	.....	.....
1892.....	41,581	36,425	191,910	168,113	77,160	67,592	.....	.....
1893.....	.....	8,689	.....	126,439	.....	195,000	.....	.....
1894.....	.....	.....	101,318	63,830	746,379	470,219	.....	.....
1895.....	.....	.....	81,753	53,369	1,496,522	976,930	.....	.....
1896.....	.....	.....	70,000	46,942	3,135,343	2,102,561	.....	.....
1897.....	5,000	2,990	80,475	48,116	5,472,971	3,272,289	.....	.....
1898.....	85,000	49,521	74,932	43,655	4,292,401	2,500,753	.....	.....
1899.....	202,000	120,352	40,231	23,970	2,939,413	1,751,302	230,000	137,034
1900.....	161,650	99,140	58,400	35,817	3,958,175	2,427,548	290,000	177,857
1901.....	151,400	89,250	41,459	24,440	5,151,333	3,036,711	195,000	114,953
1902.....	145,000	75,632	42,500	22,168	3,917,917	2,043,586	185,900	96,985
1903.....	17,777	9,502	28,600	15,287	2,996,204	1,601,471	156,000	83,362
1904.....	206,875	118,376	15,000	8,583	3,222,481	1,843,935	133,170	76,201
1905.....	2,451,356	1,479,442	19,620	11,841	4,439,417	2,075,757	89,630	54,093
1906.....	5,401,766	3,607,894	17,686	11,813	2,990,262	1,997,226	63,665	42,522
1907.....	9,982,363	6,521,178	16,000	10,452	2,745,448	1,793,519	35,988	23,510
1908.....	19,398,545	10,254,847	13,299	7,030	2,631,389	1,391,058	63,000	33,304
1909.....	24,822,099	12,784,126	13,233	6,815	2,649,141	1,364,387	45,000	23,176
1910.....	30,366,366	16,241,755	7,593	4,061	2,407,887	1,287,883	87,418	46,756
1911.....	30,540,754	16,279,443	18,435	9,827	1,887,147	1,005,924	112,708	60,078
1912.....	29,214,025	17,772,352	9,465	5,758	2,651,002	1,612,737	81,068	49,318
1913.....	28,411,261	16,987,377	34,573	20,672	3,312,343	1,980,483	87,626	52,392
1914.....	25,139,214	13,779,055	57,737	31,646	3,159,897	1,731,971	92,973	50,959
1915.....	22,748,609	11,302,419	63,450	31,524	3,565,852	1,771,658	248,049	123,241
1916.....	21,608,158	14,188,133	98,610	64,748	3,392,872	2,227,794	360,101	236,446
1917.....	19,301,835	15,714,975	136,194	110,855	2,655,994	2,162,430	119,605	97,379
1918.....	17,198,737	16,643,562	178,675	172,907	3,921,336	3,794,755	71,915	69,594
1919.....	12,117,878	13,465,628	140,926	156,600	3,713,537	4,126,556	27,556	30,621
1920.....	9,907,626	9,996,795	61,003	61,552	3,327,028	3,356,971	19,190	19,363
1921.....	9,761,607	6,116,037	38,084	23,861	3,350,357	2,099,133	393,092	246,288
1922.....	10,811,903	7,300,305	.....	.....	7,150,937	4,828,384	663,493	447,997
1923.....	10,540,943	6,838,226	33,006	21,412	6,113,327	3,965,899	1,914,438	1,241,953
<b>Grand total .....</b>	<b>341,705,844</b>	<b>218,824,238</b>	<b>2,586,099</b>	<b>2,230,029</b>	<b>102,695,867</b>	<b>67,083,435</b>	<b>5,766,585</b>	<b>3,635,382</b>

\*Does not include small productions from New Brunswick, Alberta, and Manitoba in 1917, from Manitoba from 1918 to 1922, and from Nova Scotia and Manitoba in 1923.

Important quantities of silver are being produced in Canada, both as fine metal and as bullion. Fine silver is produced at Trail, B.C., by the Consolidated Mining and Smelting Company of Canada, Limited, chiefly from the silver-lead ores, and in recent years from the copper-gold-silver ores of the province, and finds a market in Canada, the United States and China.

In Ontario, ores from the Cobalt district are treated by the Coniagas Reduction Company Thorold, Ont. and the Deloro Smelting and Refining Company, Deloro, Ont. The Ontario Smelters and Refiners, Ltd., with plants at Welland, Ont., went into voluntary liquidation during the period. Silver bullion varying in fineness from 850 to 998.2 is produced at these works, other products being white arsenic, metallic nickel and cobalt, nickel and cobalt oxides and salts of nickel and cobalt.

The Royal Mint at Ottawa also produces a limited amount of pure silver which is largely derived from domestic crude gold bullion, although a small portion is recovered from foreign crude gold, and from scrap.

The total pure silver produced as such in Canada during 1923 was 12,369,466 fine ounces and was recovered by the following companies:—

Deloro Smelting and Refining Co., Deloro, Ont.....	2,877,845 fine oz.
Coniagas Reduction Co., Thorold, Ont.....	150,613 "
Nipissing Mining Co., Cobalt, Ont.....	3,652,609 "
Cobalt Reduction Co., Cobalt, Ont.....	2,617,296 "
O'Brien Mine, Cobalt, Ont.....	8,854 "
Royal Mint, Ottawa, Ont.....	101,535 "
Consolidated Mining and Smelting Co., Trail, B.C.....	2,960,714 "

**Total for Canada.....12,369,466 "**

Table 91.—Monthly Average Prices of Silver, 1921, 1922 and 1923

From the "Engineering and Mining Journal-Press."

Month	New York (Cents per fine ounce)			London (Pence per standard ounce)		
	1921	1922	1923	1921	1922	1923
January.....	65.950	65.450	65.668	39.985	35.035	31.928
February.....	59.233	65.290	64.313	34.745	33.891	30.875
March.....	56.023	64.440	67.556	32.479	33.269	32.310
April.....	59.337	66.575	66.855	34.250	34.080	32.346
May.....	59.810	71.154	67.043	34.165	36.023	32.611
June.....	58.510	71.149	64.861	34.971	35.900	31.611
July.....	60.260	70.245	63.015	37.481	35.644	30.942
August.....	61.597	69.417	62.793	38.096	34.957	30.952
September.....	66.160	69.515	64.203	40.082	35.305	31.698
October.....	70.970	68.015	63.649	41.442	34.498	31.718
November.....	68.234	65.177	63.818	38.750	32.882	32.774
December.....	65.760	63.905	64.705	35.645	31.383	33.375
<b>Average.....</b>	<b>62.654</b>	<b>67.528</b>	<b>64.873</b>	<b>36.841</b>	<b>34.406</b>	<b>31.929</b>

Table 92.—Imports into Canada and Exports of Silver, 1921, 1922 and 1923

Item	1921	1922	1923
	\$	\$	\$
EXPORTS—			
In ore, concentrates, bullion.....	7,202,663	11,684,028	11,137,724
IMPORTS—			
Silver—			
Bullion in bars and blocks.....	581,861	657,760	723,040
Coins.....	2,083		
Sterling.....	174,788	178,223	234,047
Manufacture of gold and silver—			
Leaf.....	47,123	63,276	81,252
Sweepings.....	2,771	5,471	4,849
Manufactures, n.o.p.....	97,110	89,684	125,582
Electroplated ware.....	387,974	442,593	509,131

**Prices.**—During 1923 the monthly average New York price for silver was 65.668 cents per ounce in January, reached its highest point in March when 67.556 cents was quoted. The price fell again in April to 66.855 cents, rose to 67.043 cents in May and for the balance of the year fluctuated between the lowest figure 62.793 cents quoted in September, and 64.861 cents for June. The average quotation for the twelve months of 1923 was 64.873 cents per ounce, as against 67.528 cents in 1922.

The most important silver-producing countries in the world are, in order of importance, Mexico, United States, Canada and Peru, which accounted for 82.0 per cent of the total world's production in 1923. In all these countries important increases in silver production have been recorded and except the United States, all the silver produced has been marketed at the above rates. In the United States, production was stimulated by the price of \$1 per ounce, fixed by the Pittman Act. After the purchases during 1922 under this Act, there remained a quantity in the neighbourhood of 60,000,000 ounces still to be purchased. The Pittman Act authorized the Government of the United States to buy back at one dollar per ounce from American producers three hundred and fifty million ounces of silver which had been sold from the treasury vaults at the same price to Great Britain during the war. As these purchases naturally kept the silver produced in the United States from entering the world's markets, the termination of the Act was viewed with some alarm by producers of other countries but close students of the silver market predicted it would have but slight effect and the trend of the market since seems to have proved them right.

## QUEBEC

During 1923 the production of silver in Quebec was derived entirely from the lead and zinc concentrates of Notre Dame des Anges exported from Canada for treatment. The total was 33,006 fine ounces valued at \$21,412. Due to the idleness of the lead mines and lack of shipments of pyritic ores from Weedon no production was recorded during 1922.

## ONTARIO

The production of silver in Ontario in 1923 was 10,540,943 fine ounces valued at \$6,838,226 as against 10,811,903 fine ounces valued at \$7,300,305 in 1922. The total for 1922 included an adjustment of 1,222,450 fine ounces valued at \$825,410, to take account of the stocks of silver bullion on hand at the end of 1921, as mentioned in the special note at the beginning of this section. On this basis, the production of silver in 1923 appeared to be less than in 1922 by 270,960 ounces or 2.6 per cent; actually, of course, more silver was made in 1923 than in the preceding year.

The production in Ontario reached its highest point in 1911 in which year over 30 million ounces was produced from the rich high-grade ores of Cobalt. Since that period, the production has gradually decreased to a point around 10 million ounces annually.

During 1923 a total of (a) 6,278,759 ounces or 59.5 per cent of the total Ontario production was produced as bullion in the Cobalt district; (b) 3,028,458 ounces or 28.7 per cent was recovered by the silver smelters of southern Ontario; and (c) 205,610 ounces or 1.9 per cent was contained in gold bullion and nickel refineries, leaving a balance of (d) 1,028,116 ounces or 9.7 per cent recovered from Ontario ores and slags treated in the United States.

The corresponding figures for the year 1922 were (a) 8,043,136 ounces or 74.4 per cent; (b) 1,914,348 ounces or 17.7 per cent; (c) 177,077 ounces or 1.6 per cent and (d) 677,342 ounces or 6.3 per cent.

As indicated above, practically the whole Ontario silver production is derived from the Cobalt ores with which is included the silver produced by the nickel refineries and that contained in gold bullion. The recovery during the year from these sources was as follows: silver contained in gold bullion, 151,535 ounces as against 163,622 ounces in 1922; silver produced by the refineries of the International Nickel Company and the British America Nickel Corporation 54,075 ounces in 1923 as against 13,455 ounces in 1922.

The following table shows the percentage of production from the Cobalt Camp, the Ontario smelters, and from ores exported to the United States.

**Table 93.—Percentage of Silver Production Credited to each Group Treating Ontario Ores, 1915-1923**

Producing Group	1915	1916	1917	1918	1919	1920	1921	1922	1923
	%	%	%	%	%	%	%	%	%
Cobalt district.....	41.0	39.5	51.1	55.0	48.7	58.6	51.8	74.4	60.8
Ontario smelters.....	43.0	44.7	33.9	29.0	36.4	33.7	41.1	19.3	30.5
Total for Ontario.....	84.0	84.2	85.0	84.0	85.1	92.3	92.9	93.7	91.3
U.S. smelters.....	16.0	15.8	15.0	16.0	14.9	7.7	7.1	6.3	8.7
<b>Total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

## MANITOBA

The silver production in Manitoba has been derived from the gold and copper ores of The Pas District. During the war several copper deposits were developed and in 1918, 1919 and 1920 considerable tonnages of copper ore were shipped from the Mandy Mine to Trail, B.C. The ore carried considerable silver and in the three years mentioned almost 50,000 ounces was produced. With the drop in the price of copper and the high freight rates no shipments of copper ores have been made, with the result that the production of silver has practically ceased. The historical record is shown below.

Table 94.—Production of Silver in Manitoba, 1919-1923

Year	Fine ounces	Value
1919.....	20,700	\$ 23,069
1920.....	15,510	15,649
1921.....	33	20
1922.....	20	14
1923.....	5	3

## BRITISH COLUMBIA

The chief sources of the silver production in British Columbia have been the silver-lead zinc ores of the East and West Kootenays supplemented by the silver contained in the gold-copper ores of Rossland and the Boundary and Coast districts. During the last two or three years this production has been remarkably increased by the shipments of rich ores from the Premier mine near Stewart.

As shown in Table 90 the production in 1923 amounted to 6,113,327 fine ounces valued at \$3,965,899 as against 7,150,937 fine ounces valued at \$4,828,384 in 1922.

The production in 1923 included: (a) contained in blister copper, 1,109,905 ounces or 17.9 per cent; (b) contained in lead bullion, 2,782,932 ounces or 45.5 per cent; (c) in lead ores and concentrates exported, 13,227 ounces or 0.2 per cent; and (d) in gold, silver and copper ores exported, 2,207,263 ounces or 36.1 per cent.

The corresponding figures for 1922 were (a) 1,139,916 ounces or 15.9 per cent (b) 2,362,451 ounces or 33.1 per cent; (c) 123,192 ounces or 1.7 per cent; and (d) 3,525,378 ounces or 49.3 per cent.

## YUKON TERRITORY

The development and shipments of the rich argentiferous lead ores of the Keno Hill district accounted for the increase in the production of silver in Yukon Territory. In the year 1900 as shown in Table 90 when placer gold had reached its maximum output, the silver content amounted to about 290,000 ounces. From that year until the discovery of the silver-bearing lead ores the production gradually decreased. During 1923, the output amounted to 1,914,438 ounces valued at \$1,241,953 as against 663,493 ounces valued at \$447,997 in 1922. The production, which has almost been doubled, was the highest yet recorded and was mainly due to the activities of the mines in the Keno Hill area.

The quantity of silver from placer gold is gradually decreasing; in 1922 it was only 12,233 fine ounces as against 14,831 fine ounces in 1921. The respective percentages of silver won from lode and placer mining were 98.2 per cent and 1.8 per cent in 1922 as against 96.2 per cent and 3.8 per cent in 1921. In 1923, the proportion for placer silver dropped to less than 1 per cent.

The following table gives these percentages from 1916 to 1922.

Table 95.—Percentage of the Silver Output in the Yukon won from Lode and Placer Mining, 1916-1923

Year	From lode mining	From placer mining
	%	%
1916.....	87.0	13.0
1917.....	66.8	33.2
1918.....	68.2	31.8
1919.....	26.0	74.0
1920.....	14.6	85.4
1921.....	96.2	3.8
1922.....	98.2	1.8
1923.....	99.3	0.7

On an average about one ounce of silver is contained in each five ounces of crude bullion from alluvial workings.

Table 96.—World's Production<sup>1</sup> of Silver, 1913, 1919-1923(From the 1923 "Year Book of the American Bureau of Metal Statistics,"<sup>2</sup>)

(Fine ounces)

Country	1913	1919	1920	1921	1922	1923
<b>NORTH AMERICA—</b>						
United States.....	66,801,500	56,682,445	55,361,573	53,727,891	55,469,000	66,163,338
Canada.....	31,624,708	16,020,657	13,330,357	13,004,546	18,581,439	17,754,706
Mexico.....	55,486,431	65,904,224	66,516,354	64,465,347	81,076,899	90,810,855
<b>Total North America.....</b>	<b>153,812,639</b>	<b>138,607,326</b>	<b>135,208,284</b>	<b>131,197,784</b>	<b>155,127,338</b>	<b>174,728,899</b>
<b>Central America and West Indies.....</b>	<b>2,135,641</b>	<b>2,800,000</b>	<b>2,700,000</b>	<b>2,000,000</b>	<b>2,500,000</b>	<b>3,500,000</b>
<b>SOUTH AMERICA—</b>						
Argentina.....	35,271	25,000	30,000	25,000	25,000	*25,000
Bolivia and Chile.....	3,932,594	4,335,000	4,828,086	5,000,000	9,129,829	9,000,000
Brazil.....	28,364	25,000	30,000	33,000	30,000	*30,000
Colombia.....	587,683	494,331	480,000	500,000	500,000	*500,000
Ecuador.....	22,642	40,000	35,000	75,000	75,000	*75,000
Peru.....	9,617,094	9,821,729	9,198,282	9,853,910	13,169,765	18,000,000
Other countries.....	51,111	12,100	12,000	13,700	13,700	*14,000
<b>Total South America.....</b>	<b>14,274,759</b>	<b>14,753,160</b>	<b>14,611,368</b>	<b>15,500,610</b>	<b>22,943,294</b>	<b>27,644,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	2,104,107	15,432	13,985	15,000	8,583	.....
France.....	1,005,266	164,222	321,500	321,500	321,500	.....
Czecho-Slovakia.....	.....	580,918	680,069	703,056	900,200	.....
Great Britain.....	128,543	68,415	76,344	12,229	27,649	.....
Germany.....	6,182,445	3,475,415	3,305,020	3,375,750	3,892,015	.....
Greece.....	803,750	160,000	220,935	192,000	190,000	.....
Italy.....	423,888	300,000	297,452	219,392	215,405	.....
Norway.....	300,602	341,433	323,172	202,115	205,760	.....
Portugal.....	205,822	.....	.....	.....	.....	.....
Russia.....	.....	400,000	50,000	40,000	150,000	.....
Serbia.....	28,758	20,000	15,000	15,946	26,813	.....
Spain.....	4,031,417	2,666,232	2,956,546	2,679,349	2,778,210	.....
Sweden.....	33,339	20,576	22,569	13,342	32	.....
Turkey.....	1,509,133	100,000	100,000	100,000	125,000	.....
<b>Total Europe.....</b>	<b>16,757,070</b>	<b>8,312,643</b>	<b>8,382,592</b>	<b>7,890,579</b>	<b>8,841,167</b>	<b>*9,000,000</b>
<b>AUSTRALASIA—</b>						
New South Wales.....	14,504,889	6,304,818	675,332	4,241,890	9,912,927	.....
Queensland.....	604,979	92,048	274,235	195,328	273,036	.....
Victoria.....	16,195	6,121	6,231	5,204	6,978	.....
New Zealand.....	975,616	453,561	454,000	454,000	376,000	.....
Tasmania.....	765,187	525,343	623,359	348,658	794,585	.....
Other states.....	190,680	223,893	131,697	117,600	140,500	.....
<b>Total Australasia.....</b>	<b>17,057,546</b>	<b>7,605,784</b>	<b>2,164,854</b>	<b>5,362,680</b>	<b>11,504,026</b>	<b>8,000,000</b>
<b>ASIA—</b>						
India.....	125,209	2,165,606	2,906,397	3,587,587	4,244,304	4,900,000
China.....	.....	65,000	50,000	40,000	*40,000	*40,000
Chosen (Korea).....	15,048	20,000	1,200	2,958	10,835	*10,000
Dutch East Indies.....	465,980	1,006,842	1,027,956	1,021,994	1,109,657	*1,100,000
Japan.....	4,700,390	5,160,070	4,889,540	4,185,504	3,886,301	4,000,000
Other countries.....	51,763	32,269	25,179	29,962	25,453	*25,500
<b>Total Asia.....</b>	<b>5,358,390</b>	<b>8,449,787</b>	<b>8,900,272</b>	<b>8,868,005</b>	<b>9,316,550</b>	<b>10,075,500</b>
<b>AFRICA—</b>						
Algeria.....	.....	170,813	150,000	.....	.....	.....
Belgian Congo.....	1,454	10,000	10,674	5,819	6,559	*7,000
Rhodesia.....	121,537	180,591	164,865	161,383	179,399	162,000
Transvaal, Cape Colony and Natal.....	952,928	891,304	892,593	830,329	1,115,676	1,363,500
Other Countries.....	.....	18,986	15,116	13,362	13,362	*14,000
<b>Total Africa.....</b>	<b>1,075,919</b>	<b>1,271,694</b>	<b>1,233,248</b>	<b>1,010,893</b>	<b>1,314,996</b>	<b>1,546,500</b>
<b>Grand Total.....</b>	<b>210,471,946</b>	<b>181,800,394</b>	<b>173,200,618</b>	<b>171,830,551</b>	<b>211,656,617</b>	<b>234,494,899</b>

<sup>1</sup>Note—The basis of this table is the information published by the Director of the Mint. However revisions and additions have been made so that the totals do not agree with the Mint figures. For 1923 the figures are based on actual reports or reliable estimates, except where the asterisk is used indicating that the figure is conjectural.

<sup>2</sup> Dominion Bureau of Statistics reports the Canadian production of silver as follows: 1913—31,845,803 fine ounces; 1919—16,020,657 fine ounces; 1920—13,330,357 fine ounces; 1921—13,543,198 fine ounces; 1922—18,626,439 fine ounces; 1923—18,601,744 fine ounces.

In the *Engineering and Mining Journal-Press*, August 18, 1923, there was an article on silver in the United States, from which the following abstract is quoted.

"Plans have been perfected for close co-operation between the Senate Commission of Gold and Silver Inquiry and the Bureau of Mines. The bureau will attempt the technical side of the effort to be made to expand the use of silver.

Metals which first came into use, became widely used before either facilities, methods, or needs for research were appreciated. Their use consequently was developed on a basis of empiricism only. The metals which were not discovered or which were not isolated until the world was alive to the importance of research, have had the principal benefits of that sort of endeavour. Examples are aluminum and tungsten. The fact is now appreciated that, even with the benefit of chance working through centuries, the probability is that the complete field of usefulness of the older metals has not been explored completely.

It would seem that research applied to the older metals would be likely to broaden their fields just as it has made fields for new metals. Silver, gold, copper, lead, zinc and iron have found their principal uses largely because the need existed. The hunt then was made for the metal to fill this need. The reverse practice has come to be applied only recently. Studies now are being made to determine what are the additional things for which copper can be used. Research of the same character is being undertaken on zinc. It now has been suggested that work of this sort be undertaken on silver."

TIN

Tin ores have not yet been found in sufficient quantities in Canada to be of economic importance.

The occurrence of tin ore has been reported from several localities, the most important perhaps being the discovery of cassiterite, near New Ross, Lunenburg county, N.S. Reports upon it may be found in the Summary Reports of the Geological Survey Branch of the Department of Mines for 1907, 1908, 1910, 1911, and 1912.

Cassiterite occurs in a few scattered crystals in pegmatite dykes in the drainage basin of McDougal creek, Lardeau division, B.C., and it has been found also in black sands in the Atlin district, B.C., and in the alluvial sands of Dublin gulch, Mayo district, Y.T.

The occurrence of tin has been noted in some bodies of sulphide minerals found in the vicinity of West Hawk and Star lakes, near the boundary line between Ontario and Manitoba. Attention is called to these occurrences not on account of their commercial importance, but for the interesting manner of occurrence and the mineral associations.

Ores of tin were formerly imported from South America and reduced in Canada by the Electro Tin Products Company of Brantford, Ontario. The plant comprises roasting furnaces, electric smelting and slag-cleaning furnaces.

Table 97.—Imports of Tin into Canada 1921, 1922 and 1923.

Item	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
Tin in blocks, pigs and bars.....	2,566,600	840,278	3,681,800	1,165,532	4,220,100	1,746,720
Tin foil.....	1,391,011	330,630	2,110,215	467,246	1,296,143	377,073
Strip waste.....	19,098	469	11,875	247	12,577	370
Collapsible tubes.....		73,070		22,903		18,880
Tinware, etc. (a).....		481,087		485,807		536,488
Tin, crystals.....		(b)		(b)		(b)
Bichloride of tin.....	25,015	6,915	36,258	9,143	138,238	19,790
Total.....		1,732,449		2,150,878		2,699,321

(a) Tinware, plain, japanned or lithographed, and all manufactures of tin, n.e.s.  
(b) Included with "Bichloride of Tin."

ZINC

The production of zinc during 1923 totalled 60,416,240 pounds which at the average St. Louis price for the year of 6.607 cents per pound would be worth \$3,991,701 as against 56,290,000 pounds valued at \$3,217,536 or 5.716 cents per pound on the same market for 1922. The increase amounted to 7.0 per cent in quantity and 24.0 per cent in value.

The 1923 production included 60,050,000 pounds of refined zinc produced at Trail, B.C., and 366,240 pounds estimated as recovered from 613 tons of zinc concentrates exported from Quebec. The 1922 production was entirely in the refined state and was recovered at Trail, no exports of zinc ore or concentrates having been reported by any of the operators during that year.

Small shipments of zinc concentrates were formerly made from Galetta, Ont., and the lead-zinc mines of Notre Dame des Anges, Quebec, also accounted for a small production, part of which was used in the manufacture of zinc oxide and part exported to the United States for treatment. The oxide plant operated in Quebec was destroyed by fire in 1920, and neither of these localities reported any shipments of zinc concentrates in 1920, 1921 or 1922.

With the exception of a small production in experimental work there was no recovery of zinc spelter or refined zinc in Canada prior to 1916. The production of zinc was therefore recorded in terms of the tonnage of ore shipped and its metal content. The establishment of an electrolytic refinery at Trail placed the metallurgy of this metal in Canada on a similar basis to that of lead and copper and its production has since been recorded in the same way.

## PRODUCTION OF ZINC IN CANADA 1911-1922

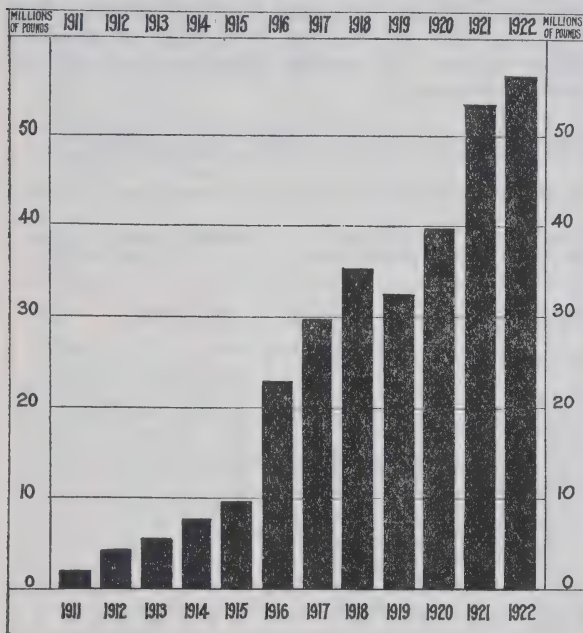


Table 98.—Production of Zinc in Canada, 1911-1923

Year	*Pounds	Total Value	Average price per pound
		\$	Cents
1911.....	1,877,479	108,105	5.758
1912.....	4,283,760	297,421	6.943
1913.....	5,640,195	318,558	5.648
1914.....	7,246,063	377,737	5.213
1915.....	9,771,651	1,292,789	13.230
1916.....	23,364,760	2,991,623	12.804
1917.....	29,668,764	2,640,817	8.901
1918.....	35,083,175	2,862,436	8.150
1919.....	32,194,707	2,362,448	7.338
1920.....	39,863,912	3,057,961	7.671
1921.....	53,089,356	2,471,310	4.655
1922.....	56,290,000	3,217,536	5.716
1923.....	60,416,240	3,991,701	6.607

\*Estimated smelter recoveries, including for years 1916 to 1922 the actual zinc recovered at Trail, B.C.

Table 99.—Production of Refined Zinc at Trail, B.C., 1916-1923

Year	Short tons
1916.....	2,974
1917.....	9,985
1918.....	12,574
1919.....	12,326
1920.....	18,517
1921.....	26,494
1922.....	28,145
1923.....	30,025
<b>Total.....</b>	<b>141,040</b>

The production of zinc-bearing ores in British Columbia during 1922 received an impetus in the new tariff of smelter rates offered by the Consolidated Mining and Smelting Company at Trail. Although not paid for by the United States smelters, the lead in ore is considered as dutiable and as there is often a small lead content in the zinc ore or concentrates shipped, the lead duty applies. Whereas formerly these zinc ores were shipped at heavy cost to the United States and the producers suffered from the handicap of high freight rates, penalties and customs duties, the schedule now offered at Trail makes it possible for operators to have their zinc ores and concentrates treated in Canada. The opening up of this market and the resulting saving in freights and duties was reflected in the increase in shipments made during 1922 and 1923 from the lead-zinc mines of the province.

The United States tariff of 1913 under which zinc ore containing 25 per cent or more of zinc was dutiable to the extent of 10 per cent on the zinc contained therein was changed on September 21, 1922, as follows:

"Zinc-bearing ore of all kinds, containing less than 10 per centum of zinc, shall be admitted free of duty; containing 10 per centum or more of zinc and less than 20 per centum, one-half of 1 cent per pound on the zinc contained therein; containing 25 per centum of zinc or more, 1½ cents per pound on the zinc contained therein."

There was also a duty of 15 per cent on metallic zinc imported into the United States, which is now changed under the new tariff as follows:

"Zinc in blocks, pigs, or slabs, and zinc dust, 1½ cents per pound; in sheets, 2 cents per pound; in sheets coated or plated with nickel or other metal (except gold, silver, or platinum), or solutions, 2½ cents per pound; old and worn-out, fit only to be manufactured, 1½ cents per pound."

**Prices.**—The price of zinc on the St. Louis market during 1923 averaged 6.607 cents per pound as against 5.716 cents in 1922. The highest quotation during 1923 was 7.706 cents, reached in March. The monthly average during the year never dropped below the 6-cent mark although during the latter part of June and early in July zinc sold as low as 5.75 cents per pound. The New York markets are generally a fraction of a cent higher per pound corresponding to the difference in freight rates. The Canadian market is centred in Montreal and Toronto to which points The Consolidated Mining and Smelting Company is the most important shipper. The average yearly Montreal quotation for zinc was 8.267 cents and the fluctuations corresponded closely to price changes in the United States markets. The average Toronto prices of zinc for 1923 were slightly in excess of those obtaining in Montreal.

**Table 100.—Monthly Average Prices of Zinc (Spelter), 1921, 1922 and 1923**

Month	Montreal (In cents per pound)			St. Louis (In cents per pound)			Ordinary Brands, in London, (Per long ton)		
	1921	1922	1923	1921	1922	1923	1921	1922	1923
							£ s. d.	£ s. d.	£ s. d.
January.....	6.561	6.472	8.544	5.413	4.691	6.815	25 15 7	26 6 5	35 14 8
February.....	6.607	6.211	8.840	4.928	4.485	7.152	25 5 5	24 4 3	35 12 3
March.....	6.686	6.288	9.412	4.737	4.658	7.706	25 10 5	25 9 4	36 14 5
April.....	6.538	6.531	8.879	4.747	4.906	7.197	26 1 6	26 11 6	34 5 6
May.....	6.809	6.691	8.013	4.848	5.110	6.625	27 6 7	27 6 0	31 1 2
June.....	6.556	6.905	7.650	4.421	5.346	6.031	27 2 2	27 17 10	29 10 11
July.....	6.311	7.274	7.740	4.239	5.694	6.089	26 12 0	29 0 10	29 6 8
August.....	6.126	7.734	8.086	4.186	6.212	6.325	25 8 1	31 3 4	32 7 8
September.....	6.190	7.864	8.190	4.235	6.548	6.438	25 10 8	31 15 0	33 9 4
October.....	6.454	7.274	7.992	4.605	6.840	6.293	26 10 8	34 10 6	32 19 11
November.....	6.550	8.639	8.014	4.665	7.104	6.347	26 4 10	38 0 2	32 18 11
December.....	6.673	8.637	7.850	4.837	6.999	6.260	27 0 11	37 15 1	32 12 2
<b>Average.....</b>	<b>6.509</b>	<b>7.210</b>	<b>8.267</b>	<b>4.655</b>	<b>5.716</b>	<b>6.607</b>	<b>26 4 1</b>	<b>30 0 0</b>	<b>33 1 2</b>

**Imports and Exports.**—The total value of the imports of zinc and its products has gradually decreased during the past three years, but since the production of zinc products alone has been small in Canada, the imports of these materials have on the whole increased, and the reduction in the total value may be accounted for by the drop in imports of zinc spelter, blocks, pigs, sheets and zinc. The former is produced in quantity at Trail, B.C., and the latter in a smaller way in Toronto. Consideration of the difference in values between years often confuses the situation due to the fluctuation in the price of the metal itself. The decrease between 1923 and 1922 will be marked when it is remembered that the 1923 price of zinc was considerably higher than that of 1922. Exports of spelter during 1923 have fallen off from those in 1922, the decrease amounting to as much as one-third. Data on brass, which contains about 30 per cent of zinc are also given.

Table 101.—Imports into Canada and Exports of Zinc and Brass, 1921, 1922 and 1923

Item	1921		1922		1923	
	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$
<b>IMPORTS</b>						
Zinc and Zinc Products—						
Zinc, in blocks, pigs and sheets.....	2,783,001	247,475	3,897,090	299,995	3,201,082	288,128
Zinc, as spelter.....	1,110,844	56,683	1,060,283	67,737	685,356	54,408
Zinc white (80% Zn.).....	12,751,203	886,784	22,065,276	1,338,568	18,976,437	1,206,560
Zinc dust (90% Zn.).....	434,981	46,440	313,652	27,390	394,378	41,167
Zinc, sulphate and chloride of (44% Zn.)..	306,248	17,944	586,050	27,285	601,630	21,991
Zinc, manufactures of.....		53,946		78,308		104,437
Total.....		1,309,272		1,839,373		1,716,741
<b>Brass and Brass Products—</b>						
Brass, in blocks, pigs and ingots(30% Zn.)..	120,600	16,860	185,400	21,671	125,500	17,418
Brass, old and scrap (30% Zn.).....	5,362,900	289,724	2,200,000	221,378	1,724,600	177,198
Brass, tubing (30% Zn.).....	735,302	194,794	1,410,141	321,074	1,714,819	474,279
Brass, plain wire (30% Zn.).....	235,906	64,125	551,081	117,496	495,444	132,635
Brass, bars and rods.....	723,500	135,750	1,842,900	268,689	1,260,700	235,003
Brass, strips, sheets or plates.....	1,170,200	259,844	1,515,300	276,361	1,588,100	330,014
Brass, wire cloth, n.o.p.....		345,327		317,290		246,126
Brass, cup for manufacture of shells.....		75,348		63,281		125,417
Brass, caps for electric batteries.....		5,073		4,743		5,097
Brass, hand-pumps.....		21,081		28,091		21,394
Brass, nails, tacks, etc.....		2,044		2,666		2,248
Brass and copper rivets, burrs and washers..		39,373		27,716		24,203
Brass, valves.....		186,036		164,014		226,485
Brass, other manufactures, n.o.p.....		1,886,123		1,722,345		2,075,433
Carburetors of brass.....				278,002		344,188
Total.....		3,521,502		3,834,817		4,437,137
<b>EXPORTS</b>						
Zinc—	Tons		Tons		Tons	
Ore.....	52	1,293	40	1,095	531	5,310
Spelter.....	12,828	1,336,389	28,518	3,054,644	19,258	2,513,763
Total.....		1,337,682		3,055,739		2,519,073
Brass—	Lb.					
Old and scrap.....	2,096,700	126,832	6,726,500	459,846	6,760,100	563,730
Rods, sheets and tubing.....	9,300	2,393	400	74	1,000	302
Valves.....		156,804		150,953		190,060
Mfrs. of brass, n.o.p.....		12,222		38,753		49,633
Total.....		298,251		649,626		803,725

Table 102.—World's Production of Zinc, 1913, 1919-1923

(From the 1923 "Year Book of the American Bureau of Metal Statistics.")

(Short Tons)

Country	1913	1919	1920	1921	1922	1923
United States.....	352,952	471,556	479,772	215,614	373,678	531,202
Canada (1).....		12,323	18,508	26,494	27,782	30,025
Belgium.....	225,050	21,886	92,880	72,917	123,777	163,228
France.....	74,815	11,902	21,659	33,069	41,887	48,336
Germany (including Silesia).....	307,238	93,696	107,435	99,207	131,168	145,503
Great Britain.....	73,000	42,126	27,550	6,515	20,529	35,033
Italy.....		1,413	1,297	427	2,901	4,060
Austria-Hungary.....	23,921					
Jugo-Slavia and Czecho-Slovakia.....		4,419	6,612	6,614	9,921	11,023
Netherlands.....	26,804		2,238	7,060	14,327	18,126
Norway.....	10,234	3,731	2,024	2,205	2,039	2,205
Poland (excluding Silesia).....	8,398	4,868	5,909	7,745	10,031	11,726
Spain.....	3,650	17,983	10,634	7,427	6,910	11,940
Sweden.....	2,204	2,648	6,458	3,858	1,757	1,543
Australia.....	4,614	9,128	10,825	1,883	26,339	45,078
Japan.....	992	21,837	17,356	11,435	13,637	15,432
Total.....	1,113,872	719,516	811,157	502,470	806,683	1,074,460

<sup>1</sup>Dominion Bureau of Statistics reports the Canadian production of Zinc in Canada as follows: 1913—2,820 tons; 1919—16,097 tons; 1920—19,932 tons; 1921—26,545 tons; 1922—28,145 tons; 1923—30,208 tons.

## NON-METALLICS

## ABRASIVES

**Corundum.**—Corundum is found in an area embracing several townships in Renfrew and Hastings counties, in the province of Ontario. The industry made its appearance there in 1900, the production reaching a maximum in 1906. From 1907 to 1913 the yearly production was smaller, but fairly uniform. Operations were indefinitely suspended during August, 1918, but were renewed again in 1919. During 1919, 1920 and 1921, old tailings were treated for the recovery of grain corundum.

In 1921, grain corundum amounting to 403 tons valued at \$55,965 was exported to the United States. No shipments of grain corundum were reported during 1922 and 1923.

[Table 103.—Production of Corundum in Canada, 1900-1923

(Short Tons)

Year	Corundum-bearing rock treated	Grain Corundum graded	Per Cent Recovery	Shipments of Grain Corundum				Average price cents per pound
				Sold in Canada	Exported	Total Shipments	Total Value	
	tons	tons		tons	tons	tons	\$	
1900.....		60				3	300	5-00
1901.....	4,134	434	10-7	85	302	387	46,415	5-97
1902.....	7,996	805	10-1	106	662	768	84,465	5-49
1903.....	(a) 8,877	839	9-5	85	618	703	77,510	5-51
1904.....	28,187	1,654	5-9	116	877	993	109,545	5-51
1905.....	23,571	1,681	7-1	140	1,504	1,644	149,153	4-48
1906.....	45,719	2,914	6-4	162	2,112	2,274	204,973	4-50
1907.....	60,532	2,682	4-4	164	1,728	1,892	177,922	4-70
1908.....	2,678	106	4-0	99	990	1,089	100,398	4-60
1909.....	35,894	1,579	4-4	129	1,362	1,491	162,492	5-45
1910.....	37,183	1,686	4-5	106	1,764	1,870	198,680	5-31
1911.....	41,975	1,641	3-9	92	1,380	1,472	161,873	5-50
1912.....	36,879	1,620	4-4	63	1,897	1,960	239,091	6-10
1913.....	12,290	763	6-2	23	1,154	1,177	137,036	5-82
1914.....	12,111	695	5-7	14	534	548	72,176	6-59
1915.....	1,724	116	6-7	21	240	262	33,138	6-33
1916.....	1,864	67	3-6	8	59	67	10,307	7-65
1917.....	4,659	188	4-0	16	172	188	32,153	8-55
1918.....	3,184	137	4-3		137	137	26,112	9-90
1919.....	1,300	26	2-0					
1920.....	(b) 13,025	322	2-5	20	176	196	24,547	6-25
1921.....	(b) 11,256	407	3-6		403	403	55,965	6-94
1922-1923.....								
<b>Total.....</b>	<b>395,038</b>	<b>20,422</b>		<b>1,449</b>	<b>18,071</b>	<b>19,524</b>	<b>2,104,251</b>	

(a) In addition to this amount which was milled in Canada, 267 tons of ore was mined and shipped to the United States for treatment there.

(b) Tailings only.

**Garnets.**—A deposit of garnets in Ashby township, Ontario, was operated during 1923 by the Bancroft Mines Syndicate. The total production of garnet concentrates and crude garnets amounted to 1,250 tons valued at \$100,000. This product was shipped to the Carborundum Company, Limited, Niagara Falls, New York, for use as an abrasive material. On November 1, 1923, the mill of the Bancroft Mines Syndicate in Ashby township was destroyed by fire.

**Grindstones, Pulpstones and Scythestones.**—The production of grindstones, pulpstones and scythestones in Canada in 1923 amounted to 2,014 tons valued at \$80,083. Of this quantity, quarries in New Brunswick accounted for 1,758 tons, while Nova Scotia contributed the balance or 256 tons. In 1922, sales totalled 1,005 tons valued at \$43,742.

Table 104.—Production of Grindstones, Pulpstones and Scythestones, in Canada, 1921, 1922 and 1923

Province	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Nova Scotia.....	183	6,990	102	3,692	256	7,906
New Brunswick.....	1,098	57,077	903	40,050	1,758	72,177
<b>Total.....</b>	<b>1,281</b>	<b>64,067</b>	<b>1,005</b>	<b>43,742</b>	<b>2,014</b>	<b>80,083</b>

Table 105.—Production of Grindstones, etc., in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value
		\$			\$
1886.....	4,020	46,545	1906.....	5,363	59,814
1887.....	5,292	64,008	1907.....	5,414	60,376
1888.....	5,764	51,129	1908.....	3,843	48,128
1889.....	3,404	30,863	1909.....	4,275	54,664
1890.....	4,884	42,340	1910.....	3,973	47,196
1891.....	4,479	42,587	1911.....	4,566	52,942
1892.....	5,283	51,187	1912.....	4,412	52,090
1893.....	4,600	38,379	1913.....	4,837	51,325
1894.....	3,757	32,717	1914.....	3,976	54,504
1895.....	3,475	31,932	1915.....	2,580	35,768
1896.....	3,713	33,310	1916.....	3,478	52,782
1897.....	4,572	42,340	1917.....	2,523	45,754
1898.....	4,935	44,775	1918.....	3,072	83,005
1899.....	4,511	43,265	1919.....	2,020	60,516
1900.....	5,539	53,450	1920.....	2,444	38,136
1901.....	4,581	45,690	1921.....	1,281	64,067
1902.....	4,633	44,118	1922.....	1,005	43,742
1903.....	5,538	48,302	1923.....	2,014	80,083
1904.....	4,649	42,782			
1905.....	5,540	62,375	<b>Total.....</b>	<b>154,245</b>	<b>1,926,996</b>

**Tripolite.**—Shipments of tripolite in 1923 amounted to 130 tons valued at \$3,250 as against 219 tons at \$5,781 in the previous twelve months.

Tripolite is a silicious material closely related to quartz and is used extensively as an abrasive. It is usually given a preliminary calcine in rotary furnaces before shipment. The entire Canadian production is derived from a deposit of this commodity at Silica Lake, Colchester County, Nova Scotia; this property was worked by the Oxford Tripoli Company from May to September, 1923.

Table 106.—Production of Tripolite in Canada, 1896-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1896.....	644	9,960	1906.....	30	225	1916.....	620	12,139
1897.....	15	150	1907.....	30	195	1917.....	600	18,000
1898.....	1,017	16,660	1908.....	30	195	1918.....	500	12,500
1899.....	1,000	15,000	1909.....	22	134	1919.....	565	11,300
1900.....	336	1,950	1910.....	20	122	1920.....	260	8,600
1901.....	850	15,300	1911.....	38	230	1921.....	341	11,268
1902.....	1,052	16,470	1912.....	620	12,138	1922.....	219	5,781
1903.....	835	16,700	1913.....	650	13,000	1923.....	130	3,250
1904.....	320	6,400	1914.....	317	12,119	<b>Total.....</b>	<b>11,331</b>	<b>223,191</b>
1905.....	300	3,600	1915.....					

Table 107.—Imports into Canada and Exports of Abrasives, 1921, 1922 and 1923

Item	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Grindstones.....		448,055		319,941		482,340
Burrstones in blocks, etc. .... No.	668	4,844	400	910	519	6,908
Emery in bulk, crushed or ground.....		44,490		41,943		57,267
Emery and carborundum wheels and manu- factures.....		197,049		209,356		151,065
Pumice and pumice stone ground.....		21,528		26,405		28,222
Iron sand or globules for polishing and saw- ing.....		13,723		11,820		20,855
Sandpaper, emery paper, etc.....		252,804		270,231		293,965
Artificial abrasives.....		74,083		163,542		243,408
<b>Total.....</b>		<b>1,056,576</b>		<b>1,044,148</b>		<b>1,284,030</b>
<b>EXPORTS—</b>						
Grindstones, manufactured.....		24,915		17,018		37,101
Stone for the manufacture of grind- stones..... Tons	91	2,686			170	1,190
Abrasives—						
Natural, n.o.p..... Cwt.	34,285	83,773	52,752	128,934	47,710	115,342
Artificial, crude, including carbor- undum..... Cwt.	139,146	522,531	266,526	1,299,818	887,343	2,819,558
Artificial, made up into wheels, stones, etc.....		18,752		14,650		27,127
<b>Total.....</b>		<b>652,657</b>		<b>1,460,420</b>		<b>3,000,318</b>

## ACTINOLITE

Shipments of actinolite in 1923 to the United States amounted to 53 tons worth \$583 or an average of \$11 a ton. The production for the previous year was 50 tons with a value of \$575. These shipments were made from milled stock on hand.

Actinolite is used as an ingredient for coal-tar roofing compounds, care being taken in the grinding so as not to destroy the fibre.

Production of actinolite in Canada has been confined to Elzevir and Kaladar townships in Hastings and Addington counties, province of Ontario; the centre of industry is at Actinolite.

Table 108.—Production of Actinolite in Canada, 1897-1923

Year	Tons	Value	Year	Tons	Value
		\$			\$
1897.....	205	1,845	1915.....	220	2,420
1898-1900.....			1916.....	250	2,750
1901.....	521	3,126	1917.....	120	1,320
1902.....	550	4,400	1918.....	228	2,508
1903.....	550	3,108	1919.....	80	880
1904-1909.....			1920.....	100	1,160
1910.....	30	330	1921.....	78	975
1911.....	67	736	1922.....	50	575
1912.....	92	1,000	1923.....	53	583
1913.....	66	720			
1914.....	119	1,304	<b>Total.....</b>	<b>3,379</b>	<b>29,760</b>

## ASBESTOS

From the point of volume of sales, 1923 may be considered the premier year for the asbestos industry in Canada, but the total sales value of this commodity declined very materially. The sales for the year totalled 231,482 tons with a return to the operators of \$7,522,506 as compared with 163,706 tons sold in 1922 worth \$5,552,723.

The total quantity of asbestos rock mined during the year amounted to 3,768,542 tons, of which, 3,217,580 tons or 85 per cent was milled. The mill recovery of marketable asbestos was 7.3 per cent or 237,000 tons.

A small test shipment of crude No. 1 and 2 was made from a newly-developed deposit of asbestos, near McKay Lake, Deloro Township, Ontario. In Quebec, experimental operations were carried on by one firm to recover the fibre from asbestos rock by the wet process.

Exports of Canadian asbestos (including sand waste), in 1923 amounted to 215,502 tons or 53,503 tons in excess of those recorded for the previous twelve months. The tonnage shipped to Great Britain increased 87 per cent from the 1922 exports. Shipments of all grades to the United States, totalled 184,565 tons or an increase of 32 per cent over the 1922 records. Exports of asbestos to Belgium, France and Japan increased during the year.

Table 109.—Production of Asbestos in Canada, 1880-1923

Year	Short Tons	Value	Year	Short Tons	Value
		\$			\$
1880*	380	24,700	1903	41,677	929,757
1881*	540	35,100	1904	48,465	1,226,352
1882*	810	52,650	1905	68,263	1,503,259
1883*	955	68,750	1906	82,185	2,060,143
1884*	1,141	75,097	1907	90,426	2,505,042
1885*	2,440	142,441	1908	90,773	2,573,355
1886*	3,458	206,251	1909	87,300	2,301,775
1887	4,619	226,976	1910	102,215	2,573,603
1888	4,404	255,007	1911	127,414	2,943,108
1889	6,113	426,554	1912	136,301	3,137,279
1890	9,860	1,260,240	1913	161,086	3,849,925
1891	9,279	999,878	1914	117,573	2,909,806
1892	6,082	390,462	1915	136,842	3,574,985
1893	6,331	310,156	1916	154,149	5,228,869
1894	7,630	420,825	1917	153,781	7,230,383
1895	8,756	368,175	1918	158,259	8,070,797
1896	12,250	429,856	1919	159,236	10,975,369
1897	30,442	445,368	1920	199,573	14,792,201
1898	23,785	491,197	1921	92,761	4,906,230
1899	25,536	485,849	1922	163,706	5,552,723
1900	29,141	748,431	1923	231,482	7,522,506
1901	40,217	1,259,759			
1902	40,416	1,148,319	<b>Total</b>	<b>2,878,052</b>	<b>107,539,488</b>

\* Exports.

Table 110.—Output and Sales of Asbestos in Canada, 1922 and 1923

Classification	1922				1923			
	Total output	Sold or Shipped			Total output	Sold or Shipped		
		Quantity	Total sales value at mill	Average value per ton		Quantity	Total sales value at mill	Average value per ton
	Tons	Tons	\$	\$	Tons	Tons	\$	\$
Crude No. 1	759	433	277,492	640 85	1,029	603	275,101	456.22
Crude No. 2	2,190	1,351	447,845	331 49	3,066	3,246	794,834	244.86
Fiberized crude	120	328	64,506	195 56	220	5	1,306	261.20
Spinning stocks	11,030	6,739	1,326,920	196 90	10,439	11,708	1,456,904	124.44
Shingle stocks	18,587	19,647	1,085,174	55 23	28,861	25,533	1,215,892	47.62
Mill board stocks	3,930	4,386	128,164	29 22	6,549	7,268	189,200	26.03
Paper stocks	43,196	44,135	1,426,533	32 32	62,702	69,743	2,292,804	32.87
Paper fillers	35,257	43,275	565,871	13 07	67,791	62,689	980,964	15.65
By-products (asbestos sand, finish, floats)	42,954	43,412	230,418	5 31	56,002	50,687	315,501	6.22
<b>Total</b>	<b>158,023</b>	<b>163,706</b>	<b>5,552,723</b>	<b>33 92</b>	<b>236,659</b>	<b>231,482</b>	<b>7,522,506</b>	<b>32.50</b>

Table 111.—Exports of Canadian Asbestos by Countries of Destination, 1921, 1922 and 1923

Commodity and Destination	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>ASBESTOS—</b>						
Great Britain.....	4,423	512,009	2,334	271,298	3,459	215,934
United States.....	43,374	2,878,172	83,562	3,961,811	109,025	5,596,569
Australia.....	175	21,438	25	6,000	180	9,909
Austria.....					400	30,000
Belgium.....	3,524	418,518	4,853	343,491	7,223	411,250
France.....	1,932	348,504	3,080	282,222	5,016	409,410
Germany.....	3,437	493,024	6,867	779,808	6,289	575,211
Italy.....	230	32,100	416	32,566	505	52,882
Japan.....	1,842	148,430	2,770	159,870	4,936	287,521
Netherlands.....	3,923	560,873	987	142,499	353	28,275
Spain.....			50	4,500		
Other countries.....	480	52,243	170	9,505	165	11,825
<b>Total.....</b>	<b>63,340</b>	<b>5,465,311</b>	<b>105,114</b>	<b>5,993,570</b>	<b>137,551</b>	<b>7,628,777</b>
<b>SAND AND WASTE—</b>						
Great Britain.....	141	2,869	139	1,689	1,174	18,925
United States.....	21,754	209,814	56,266	554,514	75,540	892,360
Other countries.....	159	3,278	480	6,020	1,237	19,960
<b>Total.....</b>	<b>22,054</b>	<b>215,961</b>	<b>56,885</b>	<b>562,222</b>	<b>77,951</b>	<b>931,245</b>
<b>ASBESTOS MANUFACTURES INCLUDING ASBESTOS ROOFING—</b>						
Great Britain.....		7,365		10,184		2,054
United States.....		77,928		74,430		61,160
British South Africa.....				821		
France.....		157,457				2,631
Morocco.....						
New Zealand.....				249		193
Other countries.....		18,524		10,142		6,460
<b>Total.....</b>		<b>261,274</b>		<b>95,826</b>		<b>72,493</b>

Table 112.—World's Production of Asbestos<sup>1</sup>, 1913, 1918-1923

(Long tons)

Country	1913	1918	1919	1920	1921	1922	1923
Canada <sup>1</sup> .....	118,361	128,086	136,669	178,190	82,822	146,166	208,680
Southern Rhodesia <sup>2</sup> .....	259	7,655	8,744	16,806	17,437	12,722	18,182
Union of South Africa <sup>2</sup> .....	859	3,280	3,582	6,147	4,810	3,919	7,488
Australia <sup>2</sup> .....		3,034	1,790	825	1,182	561	310
Cyprus (exports) <sup>2</sup> .....	1,168	228	1,331	896	897	1,530	1,556
India <sup>2</sup> .....		357	388	1,818	316	*	*
New Zealand <sup>2</sup> .....				2		*	*
China <sup>2</sup> .....		239	68	5	13	*	*
Finland.....			33	252	750	*	*
Germany <sup>2</sup> .....		*	12	28	*	*	*
Italy <sup>4</sup> .....	172	59	96	163	413	492	*
Philippine Islands <sup>2</sup> .....		69	369			*	*
Russia <sup>4</sup> .....	17,218	*	4,032	1,454	2,651	4,837	*
Spain <sup>2</sup> .....					19	*	*
United States <sup>3</sup> .....	982	891	1,036	1,471	742	60	277
France <sup>2</sup> .....				438			

<sup>1</sup>Data not available.

Source—

<sup>1</sup>Dominion Bureau of Statistics, Canada.<sup>2</sup>Imperial Mineral Resources Bureau (to 1921). Later figures from official reports of the different countries.<sup>3</sup>Mineral Resources of United States, 1923.<sup>4</sup>"Asbestos".

## BARYTES

The production of barytes in Canada during 1923 amounted to 409 tons valued at \$8,548. Nova Scotia and Ontario were the producing provinces. Shipments in the former province, were made from the mill operated by Brandram-Henderson, Limited, in connection with the Johnson mine at Lake Ainslie, Inverness county. The Ontario production was derived from a deposit near Tionaga Station, Sudbury District, the crude barytes being shipped to Toronto for grinding.

Table 113.—Production of Barytes in Canada, 1885-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1885.....	300	1,500	1888.....	1,125	5,533	1912.....	464	5,104
1886.....	3,864	19,270	1889.....	720	4,402	1913.....	641	5,410
1887.....	400	2,400	1900.....	1,337	7,605	1914.....	612	6,169
1888.....	1,100	3,850	1901.....	653	3,842	1915.....	550	6,875
1889.....			1902.....	1,096	3,957	1916.....	1,368	19,393
1890.....	1,842	7,543	1903.....	1,163	3,931	1917.....	3,490	54,027
1891.....			1904.....	1,382	3,702	1918.....	640	10,165
1892.....	315	1,260	1905.....	3,360	7,500	1919.....	468	8,154
1893.....			1906.....	4,000	12,000	1920.....	751	22,983
1894.....	1,081	2,830	1907.....	1,344	3,000	1921.....	270	9,567
1895.....			1908.....	4,312	19,021	1922.....	289	9,537
1896.....	145	715	1909.....	179	1,120	1923.....	409	8,548
1897.....	571	3,060	1910.....					
			1911.....	50	400	<b>Total.....</b>	<b>40,291</b>	<b>284,373</b>

Table 114.—Production in Canada and Imports of Barytes, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
PRODUCTION.....	270	\$ 9,567	289	\$ 9,537	409	\$ 8,548
IMPORTS—						
Barium peroxide.....	54	26,901	82	26,033	60	16,495
Blanc fixe and satin white.....	1,418	61,624	2,549	88,541	1,946	68,502
Barytes.....	1,439	40,374	2,954	64,186	2,420	53,670

## COAL

**Output.**—The total output of coal from Canadian mines during 1923 was 16,990,571 short tons, as compared with 15,157,431 tons in 1922, or an increase of 12 cent per in quantity. Comparison with the previous high record of 16,946,764 tons, made in 1920, shows that the 1923 output was greater by 43,807 tons, or 0.2 per cent.

The increase in production was largely due to the improved labour conditions prevailing throughout the year in the different fields. While the number of labour disputes increased from 15 in 1922 to 25 in 1923, the duration of these disputes and the time lost was much less in the latter year. During the period under review, 20,986 men were affected and 308,430 working days' time was lost, as against 25,251 men involved and 1,222,288 days of lost time in 1922. Thirteen strikes occurred in Alberta, one in British Columbia and the remaining eleven were in Nova Scotia. The biggest strike commenced July 4 and ended July 24 in Nova Scotia and involved 11,180 men who lost 216,700 working days. The majority of the disputes occurred in much smaller mines which averaged a few hundred employees each.

The value of the coal output in 1923 amounted to \$72,058,986 or an average of \$4.24 per ton. Higher values were recorded in 1920 and 1921. As compared with the value of production for the year 1922, the 1923 total showed an increase of \$6,540,489 or 9.9 per cent.

Alberta again retained the premier position among the coal-producing provinces with an output of 6,854,397 tons; Nova Scotia followed closely with 6,597,838 tons, while British Columbia produced 2,823,306 tons. The latter province and New Brunswick, which accounted for 276,617 tons, showed slight decreases from the quantities produced in 1922. Saskatchewan also increased its production to 438,100 tons during 1923.

Table 115.—Output of Coal from Canadian Mines, 1785-1923

Year	Short tons	Value	Average per ton	Year	Short tons	Value	Average per ton
1785-1880.....	16,426,253	\$28,190,518	\$ 1.72	1903.....	7,960,364	\$15,942,833	2.00
1881.....	1,537,106	2,688,621	1.75	1904.....	8,254,595	16,592,231	2.01
1882.....	1,848,148	3,248,446	1.76	1905.....	8,667,948	17,520,263	2.02
1883.....	1,818,684	3,109,635	1.71	1906.....	9,762,601	19,732,019	2.02
1884.....	1,984,959	3,593,831	1.81	1907.....	10,511,426	24,381,842	2.32
1885.....	1,920,977	3,417,807	1.78	1908.....	10,886,311	25,194,573	2.31
1886.....	2,116,653	3,739,840	1.77	1909.....	10,501,475	24,781,236	2.36
1887.....	2,429,330	4,388,206	1.81	1910.....	12,909,152	30,909,779	2.39
1888.....	2,602,552	4,674,140	1.80	1911.....	11,323,388	26,467,646	2.34
1889.....	2,658,303	4,894,287	1.84	1912.....	14,512,829	36,019,044	2.48
1890.....	3,084,682	5,676,247	1.84	1913.....	15,012,178	37,334,940	2.49
1891.....	3,577,749	7,019,425	1.96	1914.....	13,637,529	33,471,801	2.45
1892.....	3,287,745	6,363,757	1.94	1915.....	13,267,023	32,111,182	2.42
1893.....	3,783,499	7,359,080	1.95	1916.....	14,483,395	38,817,481	2.68
1894.....	3,847,070	7,429,468	1.93	1917.....	14,046,759	43,199,831	3.08
1895.....	3,478,344	6,739,153	1.94	1918.....	14,977,926	55,192,896	3.68
1896.....	3,745,716	7,226,462	1.93	1919*.....	13,919,096	55,622,670	3.99
1897.....	3,786,107	7,303,597	1.93	1920*.....	16,946,764	82,496,538	4.86
1898.....	4,173,108	8,224,288	1.97	1921*.....	15,057,493	72,451,656	4.81
1899.....	4,925,051	10,283,497	2.09	1922*.....	15,157,431	65,518,497	4.32
1900.....	5,777,319	13,742,178	2.38	1923*.....	16,990,571	72,058,986	4.24
1901.....	6,486,325	12,699,243	1.96				
1902.....	7,466,681	15,210,877	2.04				
				<b>Total.....</b>	<b>361,548,615</b>	<b>1,003,040,547</b>	

\*The tonnage shown is the total output from all mines in 1919, 1920, 1921, 1922 and 1923. For previous years the tonnage shown includes sales, colliery consumption, and coal used by the operators.

**Tonnage Lost.**—Tonnage lost through absenteeism, lack of orders, car shortage, mine disability, and other causes, has been shown in tabular form for all the coal mines of Canada and in each chapter a table has been included showing the percentage of the possible output produced, by districts, with analyses of the tonnage lost through each cause.

It will be readily understood that in any statement of tonnage lost by operating mines the method of computing the data must be more or less arbitrary. A plan has been worked out by the Bureau which is now being applied in every coal-producing province, and the following outline of the procedure is given in order that the reader may clearly understand how the data in the "Tonnage Lost" tables are obtained.

For each month the actual output and the actual number of days' work done by all employees on the colliery pay-rolls are determined and from these two figures the output per man-day is deduced. The number of individual shifts lost by the men whose names are on the colliery payroll for the month is recorded, and the total number of shifts so lost is multiplied by the actual tonnage produced per man-day during the month. This lost tonnage plus the actual output of the mine during the month is regarded as the possible output and the percentages given in the tables showing the proportions produced and lost are computed from these figures. The tonnage lost is then analysed according to the cause of loss and the percentage figures are included in the tables.

Computed on the foregoing basis, the tonnage lost in Canadian coal mines during 1923 amounted to 26 per cent of the total output, while the corresponding figure for 1922 was 23 per cent. Absenteeism, car shortage, mine disability, and lack of orders all showed increased percentages of loss; "other causes" showed 1 per cent less than in 1922.

**Table 116.—Tonnage Lost in the Coal Mines of Canada in 1922 and 1923 showing by Provinces the Relative Percentages produced and lost with an Analysis of the Percentage Lost.**

Province	Per cent produced	Per cent lost	Percentage Lost Through				
			Absentee-ism	Lack of orders	Car shortage	Mine disability	Other causes
Nova Scotia.....1922	73	27	5.1	11.9	0.7	0.5	8.8
.....1923	72	28	7.8	9.5	0.8	1.0	8.9
New Brunswick.....1922	79	21	5.0	13.0	.....	.....	3.0
.....1923	89	11	8.1	.....	0.1	1.0	1.8
Saskatchewan.....1922	77	23	0.3	19.5	0.4	0.5	2.3
.....1923	75	25	0.9	17.8	1.1	1.6	3.6
Alberta.....1922	78	22	1.3	13.3	0.9	0.4	6.1
.....1923	73	27	1.2	18.4	3.2	0.7	3.5
British Columbia.....1922	84	16	3.2	9.0	2.4	.....	1.4
.....1923	81	19	1.9	16.1	0.2	0.1	0.7
<b>Canada.....1922</b>	<b>77</b>	<b>23</b>	<b>3.1</b>	<b>12.2</b>	<b>1.1</b>	<b>0.4</b>	<b>6.2</b>
<b>.....1923</b>	<b>74</b>	<b>26</b>	<b>4.0</b>	<b>14.3</b>	<b>1.7</b>	<b>0.8</b>	<b>5.2</b>

**Disposition.**—In Table 117 the disposition of coal from Canadian mines during the past two years has been tabulated. It will be observed that the total gain in output was more than 1,800,000 tons, and of this total gain, the portion shipped to the railroads amounted to 1,344,750 tons. A word of explanation may be given in connection with the items “put on bank” and “lifted from bank.” The data show the total quantities put on bank at all mines during the year and the gross amount removed from bank during the year. The quantities of coal used for the manufacture of coke at the coal mines and also in briquette-making was less than 138,000 tons in 1923, but this figure represented a gain of more than 40 per cent above the figures for 1922. With the exception of shipments to railroads, as indicated above, the disposition of the output in 1923 showed little change from the corresponding data for the preceding year.

**Table 117.—Disposition of Coal from Canadian Mines, 1922 and 1923**

(Short tons)

	1922			1923		
	Total coal	Total value	Average value per ton	Total coal	Total value	Average value per ton
		\$	\$		\$	\$
Supplied to employees for domestic consumption.....	239,189	604,732	2.52	249,798	645,392	2.58
Used for power purposes—						
(a) Shops.....	19,445	59,951	3.08	11,440	35,237	3.08
(b) Colliery boilers.....	923,202	2,846,309	3.08	1,006,880	3,101,062	3.08
(c) Companies' railroads.....	89,504	275,949	3.08	87,836	270,526	3.08
(d) Harbour tugs and dredges.....	465	1,433	3.08	694	2,140	3.08
Shipped. (See Table 120)—						
(a) Ships' bunkers.....	626,789	3,532,761	5.64	606,521	3,178,825	5.24
(b) Railroads.....	3,579,212	17,083,811	4.77	4,923,962	23,048,877	4.68
(c) Other.....	9,287,196	41,036,124	4.41	9,700,537	41,318,156	4.26
Used in making coke at the colliery.....	77,363	392,091	5.07	100,537	519,773	5.17
Used in making briquettes.....	20,569	27,357	1.33	37,365	106,587	2.85
Put on bank.....	689,111	3,309,460	4.80	730,151	2,903,775	3.98
Put on waste heap.....	336,506	6,425	0.02	316,900	851	0.00
<b>Total Disposition.....</b>	<b>15,888,551</b>	<b>69,176,403</b>	<b>4.35</b>	<b>17,772,419</b>	<b>75,131,201</b>	<b>4.23</b>
Lifted from bank.....	731,120	3,657,906	5.00	781,848	3,072,215	3.93
<b>Total Output.....</b>	<b>15,157,431</b>	<b>65,518,497</b>	<b>4.32</b>	<b>16,990,571</b>	<b>72,058,986</b>	<b>4.24</b>

Table 118.—Disposition of Coal from Canadian Mines, by Provinces, 1922

(Short tons)

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia and Yukon	Total for Canada
Supplied to employees for domestic consumption.....	150,657	2,785	4,095	51,904	29,748	239,189
Shops, etc.....	19,445					19,445
Used under colliery boilers, etc.....	439,083	5,786	15,602	275,831	186,900	923,202
Used by companies' railroads.....	49,880	58	8,666	8,702	27,198	89,504
Shipped. (See Table 120).....	4,857,835	277,323	355,901	5,612,535	2,389,603	13,493,197
Used for making coke at colliery.....					77,363	77,363
Harbour tugs and dredges.....	465					465
Used in making briquettes.....				20,569		20,569
Put on bank.....	551,820	22,265	3,719	30,800	80,507	689,111
Put on waste heap.....	25,816	127	2,949	64,317	243,297	336,506
<b>Total Disposition.....</b>	<b>6,095,001</b>	<b>308,344</b>	<b>385,932</b>	<b>6,064,658</b>	<b>3,034,616</b>	<b>15,888,551</b>
Lifted from bank.....	525,929	20,831	3,495	73,747	107,118	731,120
<b>Total Output.....</b>	<b>5,569,072</b>	<b>287,513</b>	<b>382,437</b>	<b>5,990,911</b>	<b>2,927,498</b>	<b>15,157,431</b>

Table 119.—Disposition of Coal from Canadian Mines by Provinces, 1923

(Short tons)

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia and Yukon	Total for Canada
Supplied to employees for domestic consumption.....	162,987	3,508	3,998	51,626	27,679	249,798
Shops, etc.....	11,440					11,440
Used under colliery boilers, etc.....	490,376	7,963	20,720	268,921	218,900	1,006,880
Used by company's railroads.....	59,383	86	2,967	7,605	17,795	87,836
Shipped. (See Table 120).....	5,884,084	264,558	407,422	6,447,023	2,227,733	15,230,820
Used for making coke at colliery.....					100,537	100,537
Harbour tugs and dredges.....	694					694
Used in making briquettes.....				37,363		37,363
Put on bank.....	534,709	34,385	5,163	55,718	100,176	739,151
Put on waste heap.....	14,614	137	2,695	74,818	224,636	316,900
<b>Total Disposition.....</b>	<b>7,158,287</b>	<b>310,637</b>	<b>442,965</b>	<b>6,943,074</b>	<b>2,917,456</b>	<b>17,772,419</b>
Lifted from bank.....	560,449	34,020	4,865	88,677	93,837	781,848
<b>Total Output.....</b>	<b>6,597,838</b>	<b>276,617</b>	<b>438,100</b>	<b>6,854,397</b>	<b>2,823,619</b>	<b>16,990,571</b>

**Shipments.**—A compilation has been made in Table 120 to show the tonnages of coal shipped from Canadian mines by grades and destinations for the past two years. Domestic shipments, including under this heading all shipments direct from the mines to points in Canada, amounted to 8,746,809 tons in 1923, as compared with 7,996,485 tons in 1922. Considerably more Canadian coal was sold for railroad consumption in 1923 than in the preceding year, but the supply to ships' bunkers declined slightly. For these two purposes 5,530,483 tons was disposed of at the mines during the period, as against 4,206,001 tons in 1922. The amount sold for railroad locomotive use was 9,936,739 tons. It would appear that roughly about one-half of the total consumption of coal by Canadian railroad locomotives was of domestic origin. Foreign shipments reported by mine operators, and including only the coal shipped direct from the mines for export trade amounted to 953,528 tons, or a decrease of 26 per cent below the record for 1922, when 1,290,711 tons was exported. The total quantity of Canadian coal cleared for export through customs ports was 1,654,406 tons, or a decrease of 164,176 tons below the 1922 exports. The apparent discrepancy between these two totals is easily explainable and is due largely to the fact that brokers and others purchase considerable quantities of coal from the Canadian mine operators and then dispose of their purchases in the foreign market. Thus, the coal reported by the operator as sold by him for delivery to Canadian points is subsequently exported and this tonnage is included in the customs' records. There is also a difference between the time of shipment and the time of clearing through customs so that the tonnage of coal in transit appears in the one record but is excluded from the other.

From the foregoing, it appears that nearly eight and three-quarter million tons of Canadian coal was burned in Canada during 1923; of this amount about one-half was consumed in the producing provinces and approximately four million tons of Canadian coal moved in inter-provincial trade during the year. Shipments of Nova Scotia coal to other Canadian provinces, principally New Brunswick, Prince Edward Island and Quebec, amounted to 2,179,061 tons. The province of Quebec received 1,540,284 tons of Canadian coal, an increase of 85,968 tons above the receipts of Canadian coal in the preceding year and more than five times as much as reached this province in 1920.

The restoration of the St. Lawrence trade to the normal pre-war figure of 2,000,000 tons per season was therefore almost overtaken during 1923. Shipments of Canadian coal into the province of New Brunswick were about 563,600 tons, while the shipments from that province to other points in Canada amounted to 32,113 tons. About 77,760 tons of Canadian coal was shipped into Central Ontario during the year. Manitoba and the section of Ontario lying west of Fort William and Port Arthur received approximately 784,950 tons. Saskatchewan's receipts of Canadian coal were about 1,251,550 tons, while the shipments from that province to other places in Canada were nearly 219,940 tons. Alberta coal to the extent of 1,934,000 tons found its way to other Canadian provinces and 62,100 tons of British Columbia coal was also shipped for consumption in other parts of Canada.

**Table 120.—Shipments of Coal from Canadian Mines by Grades and Destinations, 1922 and 1923**

(Short tons)

Destination	1922				1923			
	Run-of-mine	Screened	Slack	Total	Run-of-mine	Screened	Slack	Total
Prince Edward Island.....	13,982	56,537	476	70,995	13,990	68,047	380	82,417
Nova Scotia.....	633,310	453,722	211,037	1,298,069	574,835	571,775	709,353	1,855,963
New Brunswick.....	327,004	182,377	52,839	562,220	462,061	220,573	52,517	735,151
Quebec.....	1,186,408	17,239	250,669	1,454,316	1,290,477	28,151	221,656	1,540,284
Ontario.....	14,227	22,123	2,457	38,807	24,371	45,075	8,320	77,766
Manitoba.....	133,242	501,699	63,220	698,161	176,413	537,433	71,102	784,948
Saskatchewan.....	226,485	1,096,848	109,063	1,432,396	234,900	1,078,818	110,598	1,424,316
Alberta.....	263,409	851,790	258,295	1,373,494	229,761	807,304	293,881	1,330,946
British Columbia.....	120,197	713,777	233,593	1,067,567	91,750	576,429	246,399	914,578
Yukon.....	300	81	79	460	.....	440	.....	440
<b>Total Domestic Shipments</b>	<b>2,918,564</b>	<b>3,896,193</b>	<b>1,181,728</b>	<b>7,996,485</b>	<b>3,098,558</b>	<b>3,934,045</b>	<b>1,714,206</b>	<b>8,746,809</b>
<b>Railroads.....</b>	<b>3,220,113</b>	<b>186,024</b>	<b>173,075</b>	<b>3,579,212</b>	<b>4,540,483</b>	<b>238,059</b>	<b>145,420</b>	<b>4,923,962</b>
<b>Ships' Bunker.....</b>	<b>301,799</b>	<b>321,081</b>	<b>3,909</b>	<b>626,789</b>	<b>260,144</b>	<b>338,072</b>	<b>8,305</b>	<b>606,521</b>
<b>Total Railroads and Ships' Bunkers.....</b>	<b>3,521,912</b>	<b>507,105</b>	<b>176,984</b>	<b>4,206,001</b>	<b>4,800,627</b>	<b>576,131</b>	<b>153,725</b>	<b>5,530,483</b>
United States.....	568,912	348,060	147,263	1,064,235	323,965	196,268	63,173	583,406
Newfoundland.....	78,854	127,376	9,992	216,222	107,465	153,444	10,476	271,385
West Indies.....	.....	.....	.....	.....	.....	106	.....	106
Europe.....	.....	386	.....	386	86,536	1,120	.....	87,656
Other Places.....	1,718	7,863	112	9,698	3,031	7,383	561	10,975
Lost at Sea.....	.....	170	.....	170	.....	.....	.....	.....
<b>Total Foreign Shipments..</b>	<b>649,494</b>	<b>483,860</b>	<b>157,367</b>	<b>1,290,711</b>	<b>520,997</b>	<b>358,321</b>	<b>74,210</b>	<b>953,528</b>
<b>Total.....</b>	<b>7,089,960</b>	<b>4,887,158</b>	<b>1,516,079</b>	<b>13,493,197</b>	<b>8,420,182</b>	<b>4,868,497</b>	<b>1,942,141</b>	<b>15,230,820</b>

**Imports.**—Data regarding imports of anthracite and bituminous coal into Canada are supplied to the Bureau twice a month by the Department of Customs. The figures show for each custom port of entry the total quantity of each kind of coal imported during the period. These data are not comparable with the imports statistics published in the Monthly Reports on the Trade of Canada, which reports show only the quantity of coal actually cleared from customs for consumption in Canada. It often happens that large quantities of bituminous coal are brought into Canada but are not cleared from customs until required for use owing to the fact that there is a duty of 53 cents a ton collected on all bituminous coal, round and run-of-mine, imported.

Since Canada's coal resources lie in the maritime provinces and in the three western provinces, Central Canada has so far been largely dependent upon the United States for its supply of fuel. Since 1922, owing to the great strike which tied up United States mines and some of those in Canada in that year, quantities of coal have been imported from Great Britain.

During 1923, the importations from Great Britain decreased from 819,130 tons to 530,469 tons, which included 240,303 tons of egg, nut, etc., 21,356 tons of dust, 55,937 tons run-of-mine and 212,873 tons of slack. Comparative figures for the different grades may be studied in Table 15. Imports of coal from the United States amounted to 22,156,851 tons, comprising 17,250,629 tons of bituminous coal and 4,906,222 tons of anthracite. As compared with the records for the preceding year, the imports of bituminous coal were approximately 6,326,600 tons higher and the imports of anthracite were in the neighbourhood of 2,392,000 tons more.

Tables 122 and 123 show for anthracite and bituminous coal respectively the importations by provinces and by grades of coal for the past three years. These data have been supplemented in Table 124 by a compilation showing the average importations of anthracite and bituminous coal from all sources by grades and by provinces during the five years 1919-1923. Similar data for the principal fuel-consuming areas in Central Canada are shown in Table 125.

**Table 121.—Imports of Coal into Canada from Great Britain, by Kinds and Grades and by Provinces, 1922 and 1923**

(Short tons)

Destination	1922				1923			
	Anthracite		Bituminous		Anthracite		Bituminous	
	Egg, Nut, etc.	Dust	Round and run-of-mine	Slack	Egg, Nut, etc.	Dust	Round and run-of-mine	Slack
Prince Edward Island.....								
Nova Scotia.....	5,645		3,267		18,570		7,871	
New Brunswick.....	19,420		1,999	17,132	35,787		5,513	17,927
Quebec.....	139,236	13,281	(a) 432,037	177,554	183,702	21,356	42,552	194,946
Ontario.....	900		3,712	3,217	2,244			
Manitoba.....								
Saskatchewan.....								
Alberta.....								
British Columbia.....	(b) 1,226		(b) 504				1	
Yukon.....								
<b>Canada.....</b>	<b>166,427</b>	<b>13,281</b>	<b>441,519</b>	<b>197,903</b>	<b>240,303</b>	<b>21,356</b>	<b>55,937</b>	<b>212,873</b>

(a) Includes Round and Run-of-Mine, 75 tons imported from Other Countries.

(b) Imported from Other Countries.

**Table 122.—Imports of Anthracite Coal into Canada from United States by Kinds and Grades and by Provinces, 1921, 1922 and 1923**

(Short tons)

Destination	1921		1922		1923	
	Egg, Nut, etc.	Dust	Egg, Nut, etc.	Dust	Egg, Nut, etc.	Dust
Prince Edward Island.....	6,643		1,589		4,303	
Nova Scotia.....	62,203	42	21,363		35,189	
New Brunswick.....	82,509		40,252	56	54,291	265
Quebec.....	1,184,445	127,267	633,237	156,210	1,359,735	251,616
Ontario.....	3,024,304	45,913	1,573,545	70,016	2,999,919	142,603
Manitoba.....	30,724	2,749	10,975	3,740	54,290	1,566
Saskatchewan.....	254		111	120	2,125	166
Alberta.....	66					
British Columbia.....	249	2	34		174	
Yukon.....						
<b>Canada.....</b>	<b>4,391,397</b>	<b>175,973</b>	<b>2,284,106</b>	<b>230,142</b>	<b>4,510,006</b>	<b>396,216</b>

**Table 123.—Imports of Bituminous Coal into Canada from United States by Kinds and Grades and by Provinces, 1921, 1922 and 1923**

(Short tons)

Destination	1921		1922		1923	
	Round and run-of-mine	Slack	Round and run-of-mine	Slack	Round and run-of-mine	Slack
Prince Edward Island.....	238		619	736	1,263	
Nova Scotia.....	1,421	459	5,245	988	26,340	18,086
New Brunswick.....	18,019	23,931	23,932	37,240	50,882	27,960
Quebec.....	2,059,632	624,934	1,052,360	264,309	2,187,348	735,643
Ontario.....	8,854,892	1,854,854	7,917,917	1,529,676	11,048,490	3,019,512
Manitoba.....	25,815	51,018	29,491	45,357	34,328	77,806
Saskatchewan.....	645	1,482	385	1,099	421	1,186
Alberta.....	797	1,032	538	609	564	546
British Columbia.....	16,926	155	9,664	3,798	*14,075	6,174
Yukon.....	5		32		5	
<b>Canada.....</b>	<b>10,978,390</b>	<b>2,557,860</b>	<b>9,040,233</b>	<b>1,883,812</b>	<b>13,363,716</b>	<b>3,886,913</b>

\*Includes 2331 tons lignite coal.

**Table 124.—Average Imports of Coal into Canada by Kinds and Grades and by Provinces for the Five Years 1919-1923**

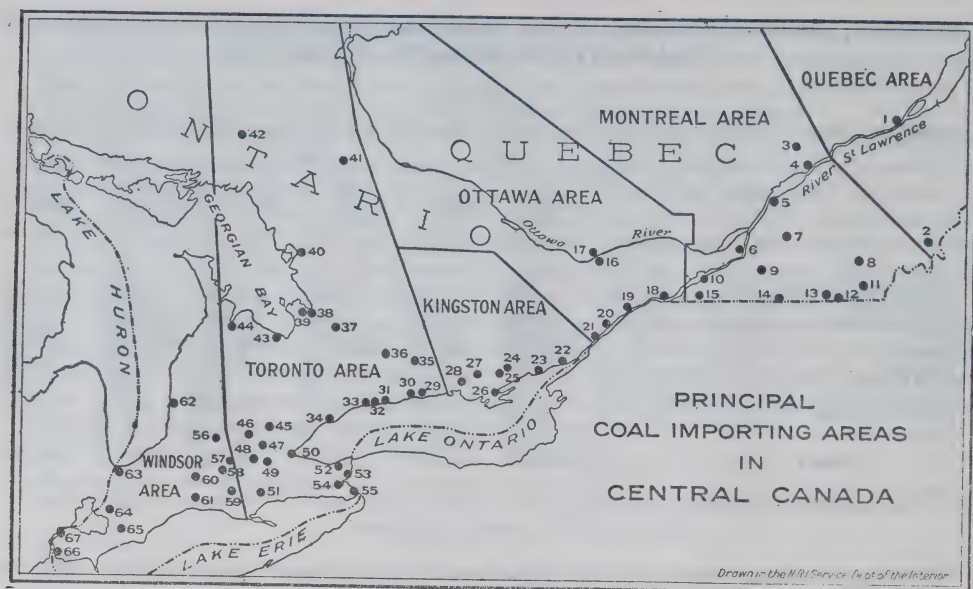
(Short tons)

Destination	Anthracite			Bituminous			Total
	Egg, Nut, etc.	Dust	Total	Round and run-of-mine	Slack	Total	
Prince Edward Island.....	6,131		6,131	555	147	702	6,833
Nova Scotia.....	49,676	19	49,695	10,176	3,932	14,158	63,853
New Brunswick.....	71,403	53	71,456	22,616	24,838	47,454	118,910
Quebec.....	1,187,151	211,447	1,398,598	2,196,123	593,586	2,789,709	4,188,307
Central Ontario.....	2,592,967	83,578	2,676,545	7,383,541	1,819,986	9,203,527	11,880,072
Head of Lakes.....	230,836	1,629	232,465	1,808,109	151,942	1,960,051	2,192,516
Total Ontario.....	2,823,803	85,207	2,909,010	9,191,650	1,971,928	11,163,578	14,072,588
Manitoba.....	24,214	2,678	26,892	29,925	44,096	74,021	100,913
Manitoba and Head of Lakes.....	255,050	4,807	259,857	1,838,034	196,038	2,034,072	2,293,429
Saskatchewan.....	531	66	597	625	806	1,431	2,028
Alberta.....	94	35	129	509	655	1,164	1,293
British Columbia.....	378	1	379	11,369	2,855	14,224	14,603
Yukon.....				10		10	10
<b>Canada.....</b>	<b>4,163,351</b>	<b>299,596</b>	<b>4,462,947</b>	<b>11,463,558</b>	<b>2,642,893</b>	<b>14,106,451</b>	<b>18,569,338</b>

**Table 125.—Average Imports of Coal into Central Canada by Principal Areas for the Five Years 1919-1923**

(Short tons)

Area	Anthracite			Bituminous		
	Egg, Nut, etc.	Dust	Total	Round and run-of-mine	Slack	Total
Quebec.....	107,722	16,713	124,435	168,775	50,910	219,685
Montreal.....	1,067,879	193,408	1,261,287	1,991,869	512,932	2,504,801
Ottawa.....	310,077	12,306	322,383	527,223	155,396	682,619
Kingston.....	133,479	994	134,473	74,744	90,019	164,763
Toronto.....	1,800,179	65,324	1,865,503	3,941,033	887,940	4,828,973
Windsor.....	338,214	6,107	344,321	2,056,132	443,497	2,499,629
<b>Total.....</b>	<b>3,757,550</b>	<b>294,852</b>	<b>4,052,402</b>	<b>8,759,776</b>	<b>2,140,694</b>	<b>10,900,470</b>



### Key to the Ports of Entry Shown on the Map

QUEBEC AREA—		OTTAWA AREA—		TORONTO AREA—Con.		TORONTO AREA—Con	
1	Quebec City	16	Ottawa	32	Oshawa	51	Simcoe
2	Megantic	17	Hull	33	Whitby	52	St. Catharines
MONTREAL AREA—		18	Cornwall	34	Toronto	53	Niagara Falls
3	Shawinigan Falls	19	Morrisburg	35	Peterboro	54	Welland
4	Three Rivers	20	Prescott	36	Lindsay	55	Bridgeburg
5	Sorel	21	Brockville	37	Orillia	WINDSOR AREA—	
6	Montreal	KINGSTON AREA—		38	Port McNicoll	56	Stratford
7	St. Hyacinthe	22	Gananoque	39	Midland	57	Woodstock
8	Sherbrooke	23	Kingston	40	Parry Sound	58	Ingersoll
9	St. John's	24	Napanee	41	North Bay	59	Tillsonburg
10	Valleyfield	25	Deseronto	42	Sudbury	60	London
11	Coaticook	26	Pictou	43	Collingwood	61	St. Thomas
12	Beebe Junction	27	Belleville	44	Owen Sound	62	Goderich
13	Mansonville	28	Trenton	45	Guelph	63	Sarnia
14	St. Armand	TORONTO AREA—		46	Kitchener	64	Wallaceburg
15	Athelstan	29	Cobourg	47	Galt	65	Chatham
		30	Port Hope	48	Paris	66	Amherstburg
		31	Bowmanville	49	Brantford	67	Windsor
				50	Hamilton		

**Consumption.**—Summary statistics have been prepared to show the output, exports, interprovincial shipments, imports and coal made available for consumption in Canada by provinces in 1923. Table 128 shows the quantities of coal imported from Great Britain separately from the importations received from the United States.

The apparent consumption of coal in Canada during 1923 was 38,023,485 tons as compared with 27,596,273 tons in 1922 and 31,173,837 tons in 1921. The data on interprovincial shipments were compiled from the monthly statements sent in by the coal operators. The imports and exports items were compiled from data supplied by the Department of Customs and in the case of imports, the figures given show the total quantity of coal imported during the year. Imported coal dumped at the ports of Fort William and Port Arthur has been included in this table with the quantities cleared from customs in the ports of Manitoba since most of the coal unloaded at the Canadian ports at Head of the Lakes finds its way westward to points in Manitoba.

From the tables it appears that in 1923, Canada produced 16.9 million tons, exported 1.6 million tons, imported from the United States 22.1 million tons and from Great Britain 0.5 million tons and thus apparently consumed 38.0 million tons. In 1922, when the output was 15.1 million tons, the quantity exported amounted to 1.8 million tons, imports 14.2 million tons and the apparent consumption was 27.5 million tons. As a matter of historical interest, Table 127 has been included showing the annual consumption of coal in Canada for the past twenty years.

Table 126.—Annual Consumption of Coal in Canada, 1903-1923

(Short tons)

Calendar Year	Canadian		Imported		Total	Per capita
	Short tons	%	Short tons	%		
1903	6,005,735	52.2	5,491,870	47.8	11,507,605	2.005
1904	6,697,183	49.2	6,909,651	50.8	13,606,834	2.346
1905	7,032,661	48.9	7,343,880	51.1	14,376,541	2.362
1906	7,927,560	51.7	7,398,906	48.3	15,326,466	2.425
1907	8,617,352	45.0	10,549,503	55.0	19,166,855	2.947
1908	9,156,478	47.3	10,195,424	52.7	19,351,902	2.820
1909	8,913,376	47.9	9,711,826	52.1	18,625,202	2.682
1910	10,532,103	50.2	10,438,123	49.8	20,970,226	2.960
1911	9,822,749	40.5	14,424,949	59.5	24,247,698	3.365
1912	12,385,696	46.0	14,549,104	54.0	26,934,800	3.657
1913	13,450,158	42.6	18,132,387	57.4	31,582,545	4.196
1914	12,214,403	45.5	14,637,920	54.5	26,852,323	3.490
1915	11,500,480	48.1	12,406,212	51.9	23,906,692	3.041
1916	12,348,036	41.3	17,517,820	58.7	29,865,856	3.717
1917	12,313,603	37.2	20,810,132	62.8	33,123,735	4.049
1918	13,160,731	37.8	21,611,101	62.2	34,771,832	4.175
1919	11,849,046	41.1	16,982,773	58.9	28,831,819	3.401
1920	14,388,541	40.9	20,815,596	59.1	35,204,137	4.079
1921	13,070,217	41.9	18,103,620	58.1	31,173,837	3.547
1922	13,333,849	48.3	14,257,424	57.7	27,596,273	3.078
1923	15,336,165	40.3	22,687,320	59.7	38,023,485	4.157

In the foregoing table the "Consumption" figures for each year from 1903 to 1918 were computed by adding production (sales, colliery consumption and coal supplied to employees) to imports, and deducting Canadian coal exported. For the compilation of the data for 1919-1923 see note on "Consumption."

Table 127.—Stocks of Coal held by Wholesale and Retail Dealers, by Provinces at December 31, 1922 and 1923

(Compiled in the Internal Trade Branch)

(Short tons)

Provinces	Anthracite from		Bituminous from			Canadian Lignite	Other	Total
	United States	Great Britain	United States	Great Britain	Canada			
1922								
Prince Edward Island					2,203			2,203
Nova Scotia	3,184			1,696	7,676			12,556
New Brunswick	886	80		53	1,600		110	2,729
Quebec	22,797	262	65,946		1,091		1,907	92,003
Ontario	53,219	880	309,300	250	749	212	269	364,879
Manitoba	23,505		65,720		8,343	20,480	237	118,285
Saskatchewan	2,419		13,717		3,449	52,750	542	72,877
Alberta	30		13,529		3,124	22,662		39,345
British Columbia	48		35		18,442	732		19,257
Canada	106,088	1,222	468,247	1,999	46,677	96,836	3,065	724,134
1923								
Prince Edward Island	171				2,377			2,548
Nova Scotia	3,922	1,709			6,483			12,114
New Brunswick	4,600	6,188			3,333			14,121
Quebec	83,906	6,261	74,494		68,406		85	233,152
Ontario	285,235	496	225,929		33,059	112	1,178	546,009
Manitoba	14,715		19,176		6,149	22,048	850	62,938
Saskatchewan	1,807		16		1,620	39,823	183	43,449
Alberta	51		64		2,927	13,008		16,050
British Columbia	6		116		12,917	1,125	404	14,563
Canada	394,413	14,654	319,795		137,271	76,116	2,700	944,949

Table 128.—Summary Statistics for 1923—Output, Exports, Interprovincial Shipments, Imports and Coal made Available for Consumption in Canada, by Provinces

(Short tons)

Provinces	Canadian Coal				Imported from U.S.A.	Imported from Great Britain	Coal available for consumption
	Output	Received from other provinces	Shipped to other provinces	Exported			
<b>PRINCE EDWARD ISLAND—</b>							
Anthracite.....					4,303		4,303
Bituminous.....		82,417			1,263		83,680
Total.....		82,417			5,566		87,983
<b>NOVA SCOTIA—</b>							
Anthracite.....					35,169	18,570	53,739
Bituminous.....	6,597,838		2,179,061	679,771	44,426	7,871	3,791,303
Total.....	6,597,838		2,179,061	679,771	79,595	26,441	3,845,042
<b>NEW BRUNSWICK—</b>							
Anthracite.....					54,556	35,787	90,343
Bituminous.....	276,617	563,598	32,113	115,364	78,842	23,440	795,020
Total.....	276,617	563,598	32,113	115,364	133,398	59,227	885,363
<b>QUEBEC—</b>							
Anthracite.....					1,611,351	205,058	1,816,409
Bituminous.....		1,540,284		3	2,922,991	237,498	4,700,770
Total.....		1,540,284		3	4,534,342	442,556	6,517,179
<b>CENTRAL ONTARIO—</b>							
Anthracite.....					3,059,964	2,244	3,062,208
Bituminous.....		24,875		877	11,717,298		11,741,296
Lignite.....		* 51,331					51,331
Sub-bituminous.....		* 1,560					1,560
Total.....		77,766		877	14,777,262	2,244	14,856,395
<b>MANTOBA AND HEAD OF LAKES—</b>							
Anthracite.....					138,414		138,414
Bituminous.....		22,269		8,213	2,462,838		2,476,894
Lignite.....		701,615					701,615
Sub-bituminous.....		61,064					61,064
Total.....		784,948		8,213	2,601,252		3,377,987
<b>SASKATCHEWAN—</b>							
Anthracite.....					2,291		2,291
Bituminous.....		101,820		11,510	1,607		91,917
Lignite.....	438,100	1,120,447	219,937				1,338,610
Sub-bituminous.....		29,275					29,275
Total.....	438,100	1,251,542	219,937	11,510	3,898		1,462,093
<b>ALBERTA—</b>							
Anthracite.....	107						107
Bituminous.....	3,243,803	18,054	103,290	605	1,110		3,159,072
Lignite.....	3,143,995		1,724,456				1,419,539
Sub-bituminous.....	466,492		106,340				360,152
Total.....	6,854,397	18,054	1,934,086	605	1,110		4,938,870
<b>BRITISH COLUMBIA AND YUKON</b>							
Anthracite.....					174		174
Bituminous.....	2,823,619	23,298	62,151	838,063	17,923	1	1,964,627
Lignite.....		71,000			2,331		73,331
Sub-bituminous.....		14,441					14,441
Total.....	2,823,619	108,739	62,151	838,063	20,428	1	2,052,573
<b>CANADA—</b>							
Anthracite.....	107				4,906,222	261,659	5,167,988
Bituminous.....	12,941,877	2,376,615	2,376,615	1,654,406	17,248,298	268,810	28,804,579
Lignite.....	3,582,095	1,944,393	1,944,393		2,331		3,584,426
Sub-bituminous.....	466,492	106,340	106,340				466,492
Total.....	16,990,571	4,427,348	4,427,348	1,654,406	22,156,851	530,469	38,023,485

\*Includes all coal shipped to any point in Ontario from Western Mines.

## COKE

Summary statistics relating to the production of coke and its by-products have been included in this report as a matter of interest. These production data refer only to by-product and beehive oven plants and do not include retort coke recovered by gas companies.

**Table 129.—Summary Statistics of Coke and its By-Products in Canada, 1921, 1922 and 1923**

Item	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>COKE—</b>						
Coal charged to ovens—						
Domestic..... Tons	586,185	3,305,922	487,907	1,657,835	736,818	3,120,403
Imported.....	910,845	7,351,428	565,496	3,447,928	970,206	6,071,461
Total..... "	1,497,030	10,657,350	1,053,403	5,105,763	1,707,024	9,191,864
Output of coke, by Provinces—						
Nova Scotia..... Tons	222,761	1,895,920	181,955	873,133	382,809	3,331,204
Ontario..... "	604,612	7,678,193	377,884	3,439,037	640,458	5,514,841
British Columbia..... "	122,590	1,340,238	107,960	1,176,877	120,922	1,296,455
Total..... "	949,963	10,914,351	667,799	5,489,047	1,144,189	10,142,500
Recovery of coke in per cent of coal treated..... %	63.5		63.4		67.0	
Imports of coke..... Tons	228,030	1,766,101	336,270	3,094,042	733,604	5,790,771
Exports of coke..... "	20,907	256,928	19,831	205,627	34,407	433,497
Consumption of coke..... "	1,218,970	12,558,542	1,016,547	8,448,598		
<b>BY-PRODUCTS—</b>						
<i>Production in Canada—</i>						
Ammonium sulphate..... Tons	16,303	1,122,382	11,143	553,159	18,747	1,108,707
Gas..... M. cu. ft.	8,634,148	1,200,808	6,073,763	725,398	14,798,857	1,842,006
Light oils.....		452,571		180,796		130,161
Tar and tar products..... Imp. gal.	11,258,212	387,934	7,616,433	233,978	9,734,471	222,497
Other products (a).....		136,682		154,249		455,574
Total.....		3,300,377		1,847,580		3,758,945
<i>Imports—</i>						
Ammonium sulphate..... Tons	157	11,513	413	24,659	259	18,577
Coal tar and pitch..... Gals.	4,091,424	235,896	4,302,233	250,316	5,774,256	324,732
Coal tar base or salt..... Tons	21	17,677	141	53,917	45	27,810
<i>Exports—</i>						
Ammonium sulphate..... Tons	14,648	784,628	10,285	532,983	17,320	1,044,681
Tar and pitch..... Gals.	3,540,417	361,621	2,016,594	223,622	4,586,753	582,013

(a) Includes coke breeze.

## FELDSPAR

The advance in the shipments of feldspar noted during the first six months of 1923 was well maintained throughout the remainder of the year. The total sales as reported were 29,225 tons valued at \$237,601, made up of 17,199 tons from Ontario and 12,026 tons from Quebec, as compared with 27,727 tons valued at \$248,402 sold in 1922. In addition to the sales of feldspar for the ceramic and building industries, a small shipment of dental spar was made to France.

The deposits in Derry township, Quebec, were operated throughout the year. During the past three years development work has been carried on by the St. Lawrence Feldspar Company on their deposit at Quatechou-Manicouagan Bay, Saguenay County, Quebec. A small shipment was made from this property during 1923. Ontario deposits in Bathurst township, Lanark County, Monteagle township, Hastings County, and Loughborough township, Frontenac County, were also operated during the year.

This mineral in a finely-ground condition is used in the enamelware, pottery and porcelain, washing compounds, abrasives, glass, roofing and paint industries and also in a coarser form as a constituent of artificial walls and floors. The Canadian production which is around 28,000 tons of feldspar per year is mainly exported in the crude form to United States for grinding.

Since the consumption of spar in Canada in the finely-ground condition is not much over 3,000 tons per annum, no difficulty has been experienced in securing raw materials of a quality suitable for any section of the industry. The bulk of the domestic demand is now supplied by Canadian mills. With the large deposits of good grades of crude spar now available, it does not appear that Canadian industries will ever find any difficulty in securing a standard product.

The average price received for crude spar was \$7.27 per ton while the ground material brought from \$16.50 to \$20 a ton.

The grinding plants situated at Toronto and Kingston, Ontario, were active during the period under review, producing 2,550 tons of ground material. The total capacity of these two plants is approximately 7,500 tons per annum.

**Table 130.—Production of Feldspar in Canada, 1890-1923**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	700	3,500	1901.....	5,350	10,700	1913.....	16,790	60,795
1891.....	685	3,425	1902.....	7,576	15,152	1914.....	18,060	70,824
1892.....	175	525	1903.....	13,928	18,966	1915.....	14,559	57,801
1893.....	575	4,525	1904.....	11,083	22,166	1916.....	19,488	71,407
1894.....			1905.....	11,700	23,400	1917.....	19,462	89,826
1895*		2,545	1906.....	16,948	40,890	1918.....	18,782	112,728
1896*	972	2,583	1907.....	12,584	29,819	1919.....	14,679	86,231
1897.....	1,400	3,290	1908.....	7,877	21,099	1920.....	37,873	280,895
1898.....	2,500	6,250	1909.....	12,783	40,383	1921.....	29,868	290,754
1899.....	3,000	6,000	1910.....	15,809	47,667	1922.....	27,727	248,402
1900.....	318	1,112	1911.....	17,723	51,939	1923.....	29,225	237,601
			1912.....	13,733	30,916			
<b>Total.....</b>							<b>403,932</b>	<b>1,934,116</b>

\* Exports

**Table 131.—World's Production of Feldspar 1913, 1918-1923**

(Long Tons)

Country	1913	1918	1919	1920	1921	1922	1923
United Kingdom†.....	66,626	38,999	47,869	76,467	35,976	*	*
Canada¹.....	14,991	16,770	14,236	32,907	26,668	24,756	26,094
Australia.....	*			4	26	*	*
Germany (Bavaria)².....	*	3,711	6,422	5,756	7,132	*	*
Italy².....		1,493	1,080	2,560	2,360	*	*
Norway (exports)⁴.....	40,186	3,433	5,084	6,296	9,200	11,643	*
Russia¹.....	*	*		419	662	*	*
Sweden⁴.....	37,269	17,568	12,698	11,858	19,661	22,010	*
United States³.....	107,996	88,498	63,441	135,551	91,865	117,127	145,004

\* Data not available.

† Including China Stone.

Source—

¹ Dominion Bureau of Statistics, Canada.

² Imperial Mineral Resources Bureau.

³ Mineral Resources of United States in 1923.

⁴ Mineral Industry, 1923.

**Table 132.—Production in Canada, Imports and Exports of Feldspar, 1921, 1922 and 1923**

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION (shipments)—</b>						
Nova Scotia.....	16	117				
Quebec.....	9,737	80,180	12,472	127,826	12,026	102,779
Ontario.....	20,115	150,457	15,255	120,576	17,199	134,822
<b>Total.....</b>	<b>29,868</b>	<b>230,754</b>	<b>27,727</b>	<b>248,402</b>	<b>29,225</b>	<b>237,601</b>
<b>IMPORTS.....</b>	<b>1,050</b>	<b>25,120</b>	<b>1,454</b>	<b>31,408</b>	<b>1,701</b>	<b>36,622</b>
<b>EXPORTS.....</b>	<b>27,293</b>	<b>169,864</b>	<b>24,995</b>	<b>170,954</b>	<b>26,476</b>	<b>177,569</b>

## FLUORSPAR

Fluorspar production in Canada during 1923 declined to almost a negligible quantity. Sales amounted to only 139 tons valued at \$1,732, while in the previous twelve months 4,503 tons worth \$102,138 were reported.

Messrs. Cross and Wellington in Ontario, and the Consolidated Mining and Smelting Company in British Columbia were the only shippers.

The United States tariff of \$5.40 per ton, which was enacted in September, 1922, practically precludes any shipment of fluorspar from Canadian deposits to that country.

Importations of fluorspar into Canada during 1923 totalled 17,235 tons, an increase of 12,255 tons over the total for the preceding year.

**Table 133.—Production in Canada, Imports and Exports of Fluorspar, 1921, 1922 and 1923**

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Ontario.....	116	1,744	284	3,905	64	597
British Columbia.....	5,403	134,523	4,219	98,233	75	1,135
<b>Total.....</b>	<b>5,519</b>	<b>136,267</b>	<b>4,503</b>	<b>102,138</b>	<b>139</b>	<b>1,732</b>
<b>IMPORTS—</b>						
Hydro-fluo-silicic acid.....	1.05	212	.06	15	3.8	662
Fluorspar.....	3,867	43,752	4,980	73,343	17,235	199,595
<b>EXPORTS.....</b>	<b>4,625</b>	<b>51,470</b>	<b>2,944</b>	<b>32,914</b>		

## GRAPHITE

**Natural Graphite.**—The market for graphite in 1923 showed a considerable improvement over conditions prevailing in the previous year. The total quantity mined in Canada during the year was 1,400 tons, while shipments amounted to 1,113 tons valued at \$67,873.

The Black Donald Graphite Company, Ltd., the Quebec Graphite Company, and the Canadian Graphite Corporation were the only firms that reported shipments. Some 1,025 tons of graphite was milled by the Black Donald Graphite Company at Calabogie, during the year.

There was no appreciable increase in the production of graphite in the United States during 1923 notwithstanding the imposition of the following tariff on imported graphite,—crude or refined, amorphous—10 per cent ad valorem; crystalline, lump, chip or dust—20 per cent ad valorem; and crystalline flake—1½ cents per pound. An excerpt from the *Engineering and Mining Journal-Press* regarding the market for graphite during 1923 follows:—

“Of the foreign countries Madagascar dominated and largely regulated the world's markets. After payment of duty, the best flake was sold in New York for about 4c. per pound—less than the cost of production of domestic flake. Importations of Ceylon graphite was greater in 1923 than during the preceding year, but the increasing substitution of flake graphite for Ceylon lump and flake, both in Europe and the United States, is having an adverse effect upon the Ceylon industry. An average of the prevailing New York prices, including duty, was: lump, 6c.; chip, 4½ to 5c.; and dust, 3 to 3½c.”

The outlook in the graphite industry seems promising and in each of the past three years sales have shown a continued increase which points to a better demand for the product.

Table 134.—Production of Graphite in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	500	4,000	1899.....	1,130	24,179	1912.....	2,060	117,122
1887.....	300	2,400	1900.....	1,922	31,040	1913.....	2,162	90,282
1888.....	150	1,200	1901.....	2,210	38,780	1914.....	1,647	107,203
1889.....	242	3,160	1902.....	1,095	28,300	1915.....	2,635	124,223
1890.....	175	5,200	1903.....	728	23,745	1916.....	3,955	325,362
1891.....	260	1,560	1904.....	452	11,760	1917.....	3,714	402,892
1892.....	167	3,763	1905.....	541	16,735	1918.....	3,114	248,870
1893.....			1906.....	387	18,300	1919.....	1,360	100,221
1894*.....	3	223	1907.....	579	16,000	1920.....	2,190	165,617
1895.....	220	6,150	1908.....	251	5,565	1921.....	937	65,862
1896.....	139	9,455	1909.....	864	47,800	1922.....	597	31,353
1897.....	436	16,240	1910.....	1,392	74,087	1923.....	1,113	67,873
1898.....		13,698	1911.....	1,269	69,576			
						<b>Total.....</b>	<b>40,896</b>	<b>2,319,796</b>

\*Exports.

Table 135.—Production in Canada, Imports and Exports of Graphite, 1921, 1922 and 1923

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Ore milled.....	1,500		1,800		1,400	
PRODUCTION (shipments)—						
No. 1 Flake.....	149	29,187	597	31,353	1,113	67,873
No. 2 Flake.....						
No. 3 Flake and Dust.....		36,675				
<b>Total.....</b>	<b>937</b>	<b>65,862</b>	<b>597</b>	<b>31,353</b>	<b>1,113</b>	<b>67,873</b>
IMPORTS—						
Crucibles, plumbago.....		23,786		39,061		57,322
Plumbago, not ground or otherwise manufactured.....		4,141		1,007		1,661
Plumbago, ground and manufactures of, n.o.p.....		47,463		47,095		70,704
EXPORTS—						
Graphite or plumbago, crude or refined....	614	40,809	452	16,619	799	36,980

**Artificial Graphite.**—Artificial graphite is manufactured in electric furnaces at Niagara Falls, Ontario, by the Acheson Graphite Company. The annual production over a period of fifteen years is shown in the following table:

Table 136.—Artificial Graphite made in Canada, 1909-1923

Year	Pounds	Year	Pounds	Year	Pounds
1909.....	513,436	1914.....	1,234,239	1919.....	358,524
1910.....	2,442,166	1915.....	497,271	1920.....	207,180
1911.....	2,172,098	1916.....	525,048	1921.....	376,508
1912.....	2,302,625	1917.....	1,096,172	1922.....	724,524
1913.....	2,184,472	1918.....	1,808,698	1923.....	1,554,376

## GYPSUM

The total shipments of gypsum from Canadian deposits during 1923 amounted to 578,301 tons valued at \$2,243,100 as compared with 559,265 tons worth \$2,160,898 in the previous year. The production was made up of lump, crushed, fine ground and calcined gypsum sold; there was also included the calcined gypsum used in the calcining plants for the production of wall plaster,

wall board, alabastine and other gypsum products. The average values, by grades, received by operators were as follows: lump, \$1.81; crushed, \$1.90; fine ground \$6.14; and calcined \$11.28 per ton.

The output of gypsum rock totalled 558,853 tons, of which quantity 152,036 tons or 27 per cent was calcined. Provincial quarry outputs were as follows: Nova Scotia, 325,574 tons; New Brunswick, 81,549 tons; Ontario, 112,004 tons; Manitoba, 39,236 tons; and British Columbia, 490 tons.

For statistical purposes, the production of gypsum is considered to be the sum of the quantities disposed of in the different marketable forms, care being taken to avoid duplication; the values used are those at point of shipment.

Exports of Canadian crude gypsum principally to the United States totalled 397,329 tons. Ground gypsum and prepared wall plaster exported during the year amounted to 4,654 tons; United States and New Zealand were the principal importers of these materials.

Table 137.—Production of Gypsum in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	162,000	178,742	1899.....	244,566	257,329	1912.....	578,458	1,324,620
1887.....	154,008	157,277	1900.....	252,101	259,009	1913.....	636,370	1,447,739
1888.....	175,887	179,393	1901.....	293,799	340,148	1914.....	516,880	1,156,207
1889.....	213,273	205,108	1902.....	333,599	379,479	1915.....	474,815	854,929
1890.....	226,509	194,033	1903.....	314,489	388,459	1916.....	342,915	738,593
1891.....	203,605	206,251	1904.....	345,961	373,474	1917.....	336,332	881,984
1892.....	241,048	241,127	1905.....	442,158	586,168	1918.....	152,287	823,006
1893.....	192,568	196,150	1906.....	469,022	643,294	1919.....	299,063	1,215,287
1894.....	223,631	202,031	1907.....	485,921	646,014	1920.....	429,144	1,893,991
1895.....	226,178	202,608	1908.....	340,964	575,701	1921.....	386,550	1,785,533
1896.....	207,032	178,061	1909.....	473,129	809,632	1922.....	559,265	2,160,898
1897.....	239,691	244,531	1910.....	525,246	934,446	1923.....	578,301	2,243,100
1898.....	219,256	232,515	1911.....	518,383	993,394			
<b>Total.....</b>							<b>13,014,404</b>	<b>26,331,166</b>

Table 138.—Summary of Statistics on Gypsum in Canada, 1921, 1922 and 1923

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Ore mined.....	434,545		484,629		558,853	
Ore calcined.....	121,878		145,954		152,036	
<b>PRODUCTION BY GRADES—</b>						
Lump.....	195,456	347,180	350,650	534,160	217,414	394,217
Crushed.....	66,893	171,567	68,181	154,197	232,899	445,431
Fine ground.....	7,020	24,026	5,789	35,880	7,452	45,719
Calcined.....	117,181	1,242,762	134,665	1,436,661	120,536	1,359,733
<b>Total.....</b>	<b>386,550</b>	<b>1,785,538</b>	<b>559,265</b>	<b>2,160,898</b>	<b>578,301</b>	<b>2,243,100</b>
<b>PRODUCTION BY PROVINCES—</b>						
Nova Scotia.....	206,831	511,883	332,404	580,148	341,705	747,934
New Brunswick.....	54,030	360,220	82,462	517,668	104,740	564,680
Ontario.....	84,790	433,053	110,227	621,668	99,958	542,317
Manitoba.....	40,859	480,282	34,072	440,914	31,575	380,554
British Columbia.....	40	100	100	500	323	1,615
<b>Total.....</b>	<b>386,550</b>	<b>1,785,538</b>	<b>559,265</b>	<b>2,160,898</b>	<b>578,301</b>	<b>2,243,100</b>
<b>IMPORTS—</b>						
Crude.....	2,952	31,303	2,872	21,040	3,654	39,336
Ground.....	41	2,427	148	5,592	78	3,253
Plaster of Paris.....	2,635	42,325	3,657	49,015	3,617	54,591
<b>Total.....</b>	<b>5,628</b>	<b>76,055</b>	<b>6,677</b>	<b>75,647</b>	<b>7,349</b>	<b>97,180</b>
<b>EXPORTS—</b>						
Crude.....						
Ground.....	230,011	417,502	325,354	505,464	397,329	578,859
	4,509	80,239	3,186	59,534	4,654	92,478
<b>Total.....</b>	<b>234,520</b>	<b>497,741</b>	<b>328,540</b>	<b>564,998</b>	<b>401,983</b>	<b>671,337</b>

## IRON OXIDES

The output of iron oxides in Canada is marketed in two forms—crude and calcined. The former is dried before shipment for use in the purification of illuminating gas, while the latter is calcined and ground for consumption in the paint industry.

Shipments of iron oxides in 1923 amounted to 10,424 tons valued at \$129,636, comprising 7,940 tons crude and 2,484 tons calcined and ground.

In addition to the usual production of oxides from the bog iron ore deposits in the province of Quebec, shipments of approximately 500 tons were made by two operators in British Columbia.

Table 139.—Production of Iron Oxides in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	350	2,350	1899.....	3,919	20,000	1912.....	7,654	32,410
1887.....	485	3,733	1900.....	1,966	15,398	1913.....	5,987	41,774
1888.....	397	7,900	1901.....	2,233	16,735	1914.....	5,890	51,725
1889.....	794	15,289	1902.....	4,955	30,495	1915.....	6,248	48,353
1890.....	275	5,125	1903.....	6,266	32,760	1916.....	8,811	58,711
1891.....	900	17,750	1904.....	3,925	24,995	1917.....	9,409	87,605
1892.....	390	5,860	1905.....	5,105	34,675	1918.....	17,317	112,440
1893.....	1,070	17,700	1906.....	6,758	36,125	1919.....	11,862	113,427
1894.....	611	8,690	1907.....	5,828	35,570	1920.....	19,128	157,909
1895.....	1,339	14,600	1908.....	4,746	30,440	1921.....	9,048	93,610
1896.....	2,362	16,045	1909.....	3,940	28,093	1922.....	7,285	110,608
1897.....	3,905	23,560	1910.....	4,813	35,185	1923.....	10,424	129,636
1898.....	2,226	17,450	1911.....	3,622	28,333			
						<b>Total.....</b>	<b>192,234</b>	<b>1,562,995</b>

Table 140.—Production in Canada, Imports and Exports of Iron Oxides, 1921, 1922 and 1923

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	9,048	93,610	7,285	110,608	10,424	129,636
IMPORTS—						
Ochrey earths.....	1,217	61,576	1,766	73,115	2,251	79,203
Oxides.....	2,191	346,070	3,671	443,869	3,530	476,382
EXPORTS (Mineral pigments, iron oxides and ochres).....	1,491	66,631	1,259	60,104	1,041	51,617

## MAGNESITE

The total production of magnesite in Canada during 1923 was derived from deposits in Argenteuil County, Quebec. The sales of this commodity during the year amounted to 4,801 tons valued at \$134,382 as compared with 2,849 tons at \$76,294 in 1922.

The average price per ton, obtained by producers during the year, was \$30.90 for calcined and \$27.92 for dead-burned magnesite. In 1922, the prevailing prices were \$22.83 for calcined and \$29 for dead-burned.

Dead-burned magnesite is used entirely in the metallurgical industry as a refractory lining for furnaces. Calcined magnesite is used as a plastic material for floors and walls in buildings and also in the manufacture of pipe and furnace coverings.

The "New Tariff Act of 1922 on Imports into United States," which came into effect in September, 1922, provided the following duties on the various forms of magnesite; Crude magnesite,  $\frac{5}{16}$  of 1 cent per pound; caustic calcined magnesite,  $\frac{5}{8}$  of 1 cent per pound; dead-burned and grain magnesite, not suitable for manufacture into oxychloride cements,  $\frac{23}{40}$  of 1 cent per pound.

The exports of calcined magnesite from Canada amounting to 563 tons were less than in the previous year.

The United States Magnesite Cement Building Products Association is seeking to lower the present tariff and has presented its case to the Tariff Commission. The American producers on the other hand have sought to maintain and even increase the tariff.

Table 141.—Production of Magnesite in Canada, 1908-1923

Year	Tons	Value	Year	Tons	Value
		\$			\$
1908.....	120	840	1917.....	58,090	728,275
1909.....	330	2,508	1918.....	39,365	1,016,765
1910.....	323	2,160	1919.....	11,273	328,465
1911.....	991	5,531	1920.....	18,378	512,756
1912.....	1,714	9,645	1921.....	3,730	81,320
1913.....	515	3,335	1922.....	2,849	76,294
1914.....	358	2,240	1923.....	4,801	134,382
1915.....	14,779	126,584			
1916.....	55,413	563,829	<b>Total.....</b>	<b>213,029</b>	<b>3,594,929</b>

Table 142.—Production in Canada, Imports and Exports of Magnesite, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude, mined.....	9,311		8,678		13,315	
Crude, calcined.....	4,648		8,202		12,125	
<b>PRODUCTION—</b>						
Crude.....	1,673	15,024				
Calcined.....	684	17,200	1,026	23,430	120	3,705
Dead-burned.....	1,373	49,096	1,823	52,864	4,681	130,677
<b>Total.....</b>	<b>3,730</b>	<b>81,320</b>	<b>2,849</b>	<b>76,294</b>	<b>4,801</b>	<b>134,382</b>
<b>IMPORTS—</b>						
Magnesia pipe covering.....		92,427		86,938		141,926
Magnesite.....	185	8,000	79	2,198	244	9,223
Magnesite firebrick.....		61,728		56,561		120,453
<b>EXPORTS—</b>						
Crude.....		5	800	1,800		
Calcined.....	1,351	63,603	940	21,317	563	14,056

## MAGNESIUM SULPHATE

The production of magnesium sulphate in Canada during 1923 amounted to 121 tons valued at \$6,580 as compared with 1,021 tons with a value of \$24,017 in the previous year. These sales were made from the magnesium sulphate deposit near Ashcroft, British Columbia, which is owned and operated by the Basque Chemical Company. The No. 1 grade sold for \$60 per ton, while the No. 2 grade brought \$40 a ton. In addition to some sales of this commodity to local dealers, shipments were made as far east in Canada as Toronto, Ontario.

Importations during the year of magnesium sulphate or epsom salts were considerably higher than in 1922, totalling 1,867 tons evaluated at \$47,155, while the exports decreased to 20 tons worth \$830.

Table 143.—Production in Canada, Imports and Exports of Magnesium Sulphate, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Crude.....	1,412	18,425	443	4,182		
Refined.....	617	21,081	578	19,834	121	6,580
<b>IMPORTS.....</b>		<b>20,987</b>	<b>1,398</b>	<b>44,499</b>	<b>1,867</b>	<b>47,155</b>
<b>EXPORTS.....</b>	<b>120</b>	<b>4,562</b>	<b>142</b>	<b>4,838</b>	<b>20</b>	<b>830</b>

## MICA

The improvement noted in the mica industry during 1922 continued throughout 1923. Sales totalled 3,525 tons at \$326,974 as against 3,349 tons worth \$152,263 in 1922. Shipments of the thumb-trimmed grades (from 1 x 1 inch to 4 x 6 inch) amounting to 419,130 pounds were higher than in 1922. The quantity of scrap mica marketed was slightly lower. This material when ground is used very extensively in the manufacture of prepared roofings.

The deposits of phlogopite mica in the Lièvre-Gatineau district, Quebec, and in Frontenac county, Ontario, continued to supply nearly the entire Canadian production.

It will be noted that the stated value of the exports of Canadian mica exceeded by a considerable amount the value placed on shipments reported by operators. An explanation of this lies in the fact that the exportation consisted principally of mica splittings, shipped from large trimming shops, situated in Ontario and Quebec.

Under the United States "*New Tariff Act*" the duties on the different grades of mica are as follows: Mica, unmanufactured, valued at not above 15 cents per pound—4 cents per pound; 25 per centum ad valorem; mica, cut or trimmed and mica splittings—30 per centum ad valorem; mica plates, and built-up mica, and all manufactures of mica, of which mica is the component material of chief value—40 per centum ad valorem; ground mica—20 per centum ad valorem.

Table 144.—Production of Mica in Canada, 1886-1923

Year	Value	Year	Tons	Value	Year	Tons	Value
	\$			\$			\$
1886.....	29,008	1899.....		163,000	1912.....	580	143,976
1887.....	29,816	1900.....		166,000	1913.....	1,104	194,304
1888.....	30,207	1901.....		160,000	1914.....	595	109,061
1889.....	28,718	1902.....		135,904	1915.....	417	91,905
1890.....	68,074	1903.....		177,857	1916.....	1,208	255,239
1891.....	71,510	1904.....		160,777	1917.....	1,166	358,851
1892.....	104,745	1905.....		178,235	1918.....	747	271,550
1893.....	75,719	1906.....		303,913	1919.....	2,754	273,788
1894.....	45,581	1907.....		312,599	1920.....	2,203	376,022
1895.....	65,000	1908.....		139,871	1921.....	702	70,063
1896.....	60,000	1909.....	369	147,782	1922.....	3,349	152,263
1897.....	76,000	1910.....	758	190,385	1923.....	3,525	326,974
1898.....	118,375	1911.....	590	128,677			
					<b>Total.....</b>		<b>5,791,749</b>

Table 145.—Production of Mica in Canada by Grades, 1922 and 1923

Item	1922			1923		
	Pounds	Value f. o. b. shipping point	Price per pound	Pounds	Value f. o. b. shipping point	Price per pound
		\$	\$		\$	\$
Rough cobbled.....	186,470	22,305	0.12	280,767	26,926	0.10
Thumb-trimmed.....	95,702	25,837	0.27	419,130	87,769	0.21
Splittings only.....	112,778	72,303	0.64	210,056	176,785	0.84
Scrap.....	6,302,157	31,818	0.005	6,139,076	35,494	0.005
<b>Total.....</b>	<b>6,697,107</b>	<b>152,263</b>	<b>0.02</b>	<b>7,049,029</b>	<b>326,974</b>	<b>0.047</b>

Table 146.—Production in Canada and Exports of Mica, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	484	41,172	1,360	97,748	1,545	216,684
Ontario.....	218	28,891	1,989	54,515	1,980	110,290
<b>Total.....</b>	<b>702</b>	<b>70,063</b>	<b>3,349</b>	<b>152,263</b>	<b>3,525</b>	<b>326,974</b>
<b>EXPORTS—</b>						
Cobbed.....	12	12,942	74	45,151	85	40,286
Splittings.....	185	195,479	286	366,974	502	624,110
Scrap and waste.....	967	12,061	3,473	41,946	4,855	70,866
Plate and manufactures.....		4,201		10,438		22,014
<b>Total.....</b>		<b>224,683</b>		<b>464,512</b>		<b>757,276</b>

## MINERAL WATERS

Mineral waters produced in Canada during 1923 amounted to 232,451 gallons valued at \$16,455 as compared with 221,433 gallons at \$14,220 in the previous year. Mineral springs in Ontario and Quebec contributed the total Canadian production.

In the present compilation, there has been included a record of all known shipments of natural mineral waters sold to the general public for medicinal purposes. No record has been kept of the shipments made of ordinary spring waters.

The values given do not take into account any mineral waters used at the springs for drinking or bathing purposes but include only the shipments from the springs in bottles or other containers.

Table 147.—Production of Mineral Waters in Canada, 1888-1923

Year	Gals.	Value	Year	Value	Year	Gals.	Value
		\$		\$			\$
1888.....	124,850	11,456	1900.....	75,000	1913.....		173,677
1889.....	424,600	37,360	1901.....	100,000	1914.....		134,111
1890.....	561,165	66,031	1902.....	100,000	1915.....		115,274
1891.....	427,485	54,268	1903.....	100,000	1916.....		127,806
1892.....	640,380	75,348	1904.....	100,000	1917.....		145,814
1893.....	725,096	108,347	1905.....	100,000	1918.....		154,468
1894.....	767,460	110,040	1906.....	100,000	1919.....		71,015
1895.....	739,382	126,048	1907.....	136,020	1920.....		24,582
1896.....	706,372	111,736	1908.....	151,953	1921.....	328,273	21,716
1897.....	749,691	141,477	1909.....	175,173	1922.....	221,433	14,220
1898.....	555,000	100,000	1910.....	199,563	1923.....	232,451	16,455
1899.....		100,000	1911.....	223,758			
			1912.....	172,465	<b>Total.....</b>		<b>3,775,181</b>

Table 148.—Production in Canada, Imports and Exports of Mineral Waters, 1921, 1922 and 1923

Item	1921		1922		1923	
	Imp. Gals.	Value	Imp. Gals.	Value	Imp. Gals.	Value
		\$		\$		\$
<b>PRODUCTION, by provinces—</b>						
Quebec.....	19,626	7,278	12,161	3,692	5,421	2,408
Ontario.....	308,647	14,438	209,272	10,528	227,030	14,047
<b>Total.....</b>	<b>328,273</b>	<b>21,716</b>	<b>221,433</b>	<b>14,220</b>	<b>232,451</b>	<b>16,455</b>
<b>IMPORTS—Mineral and aerated waters.....</b>		159,092		156,420		169,473
<b>EXPORTS—Mineral and aerated waters.....</b>		44,022		123,555		192,261

NATRO-ALUNITE

The Alunite-Chemical Corporation, Limited, operated a deposit of natro-alunite at Kyuquot Sound on the west coast of Vancouver Island, British Columbia, for a short time during the month of April. Shipments of ground and calcined material amounting to 15 tons valued at \$750 were made during 1923. In the previous year the total shipments were 50 tons worth \$2,500. The treatment of this ore consisted in crushing, grinding and washing.

NATURAL GAS

The production of natural gas in Canada in 1923 of 15,960,583 thousand cubic feet was 1,277-932 thousand cubic feet higher than the 1922 record. Ontario continued to be the principal producer, closely followed by the province of Alberta. The latter province's production of 7,191,670 thousand cubic feet showed an increase of 1,323,231 thousand cubic feet.

In Alberta and Ontario the manufacture of carbon black from natural gas is a promising new industry and the Dominion Government has already published regulations covering the manufacture of this product from natural gas. Two plants are now being made ready to produce carbon black.

Table 149.—Production of Natural Gas in Canada, 1892-1923

Year	Value	Year	Value	Year	M. cu. ft.	Value
	\$		\$			\$
1892.....	150,000	1903.....	202,210	1914.....	21,692,504	3,484,727
1893.....	376,233	1904.....	328,376	1915.....	20,124,162	3,708,035
1894.....	313,754	1905.....	379,561	1916.....	25,478,458	3,958,029
1895.....	423,032	1906.....	583,523	1917.....	27,408,940	3,045,298
1896.....	276,301	1907.....	815,032	1918.....	20,140,309	4,350,940
1897.....	325,873	1908.....	1,012,660	1919.....	19,937,769	4,176,037
1898.....	322,123	1909.....	1,207,029	1920.....	16,845,518	4,232,642
1899.....	387,271	1910.....	1,346,471	1921.....	14,077,601	4,594,164
1900.....	417,094	1911.....	1,907,678	1922.....	14,682,651	5,846,501
1901.....	339,476	1912.....	2,362,700	1923.....	15,960,583	5,884,618
1902.....	195,992	1913.....	2,309,381			
				Total.....		61,260,761

Table 150.—Production of Natural Gas in Canada, 1921, 1922 and 1923

Province	1921		1922		1923	
	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value
PRODUCTION—		\$		\$		\$
New Brunswick.....	708,743	139,375	753,898	148,040	640,300	126,068
Ontario.....	8,422,774	3,080,130	8,060,114	4,076,296	8,128,413	4,066,244
Alberta.....	4,945,834	1,374,599	5,868,439	1,622,105	7,191,670	1,692,246
Manitoba.....	200	60	200	60	200	60
Total.....	14,077,601	4,594,164	14,682,651	5,846,501	15,960,583	5,884,618

PEAT

The Alfred bog, which in previous years was operated for experimental purposes by the Ontario and Federal Governments, was inactive during 1923. In 1922, shipments amounting to 3,000 tons evaluated at \$14,500 were reported. The Peat Fuels, Limited, of Montreal has now taken over the plant at Alfred, Ontario.

Table 151.—Production of Peat in Canada, 1900-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1900.....	400	1,200	1908.....	60	180	1916.....	300	1,500
1901.....	220	600	1909.....	60	240	1917-18.....		
1902.....	475	1,663	1910.....	841	2,604	1919.....	986	6,561
1903.....	1,100	3,300	1911.....	1,463	3,817	1920.....	4,550	18,650
1904.....	800	2,400	1912.....	700	2,900	1921.....	1,666	6,664
1905.....	80	260	1913.....	2,600	10,100	1922.....	3,000	14,500
1906.....	474	1,422	1914.....	685	2,470	1923.....		
1907.....	50	200	1915.....	300	1,050			
						<b>Total.....</b>	<b>20,110</b>	<b>82,281</b>

## PETROLEUM

**Crude Petroleum.**—The production of crude petroleum in Canada in 1923 was 170,169 barrels valued at \$522,018 as compared with 179,068 barrels at \$611,176 in the previous year, a decline of approximately 9,000 barrels. The average values per barrel received by operators in the producing provinces in 1923 were as follows: New Brunswick, \$4.04; Ontario, \$3; and Alberta, \$4.23.

A section from "An Act respecting the payment of Bounties on Petroleum", as enacted on June 30, 1923, which is administered by the Department of Trade and Commerce, is given here, as important changes have been made in the duration and the rates of payment.

The said bounty shall be paid during the periods and at the rates following, that is to say:—

"On such crude petroleum produced on or before the thirtieth day of June, one thousand nine hundred and twenty-four, a bounty of one and one-half cents per imperial gallon shall be paid;

On such crude petroleum produced on or after the first day of July, one thousand nine hundred and twenty-four, and not later than the thirtieth day of June, one thousand nine hundred and twenty-five, a bounty of three-quarters of one cent per imperial gallon shall be paid;

On such crude petroleum produced on and after the first day of July, one thousand nine hundred and twenty-five, no bounty shall be paid."

The value of importations of petroleum and its products into Canada during 1923 decreased approximately \$4,400,000. The quantity of gasoline imported during the year increased from 42 million gallons to 49 million gallons.

Table 152.—Production of Crude Petroleum in Canada, 1881-1923

Year	Barrels*	Value	Year	Barrels*	Value	Year	Barrels*	Value
		\$			\$			\$
1881.....	368,987		1896.....	726,822	1,155,647	1911.....	291,092	357,073
1882.....	389,573		1897.....	709,857	1,011,546	1912.....	243,336	345,050
1883.....	472,866		1898.....	758,391	1,061,747	1913.....	228,080	406,439
1884.....	571,000		1899.....	808,570	1,202,020	1914.....	214,805	343,124
1885.....	587,563		1900.....	710,498	1,151,007	1915.....	215,464	300,572
1886.....	584,061	525,655	1901.....	622,392	1,008,275	1916.....	198,123	392,284
1887.....	713,728	556,708	1902.....	530,624	951,190	1917.....	213,832	542,239
1888.....	695,203	713,695	1903.....	486,637	1,048,874	1918.....	304,741	885,143
1889.....	704,690	653,600	1904.....	503,474	935,895	1919.....	240,466	736,324
1890.....	795,030	902,734	1905.....	634,095	856,028	1920.....	196,251	822,235
1891.....	755,298	1,010,211	1906.....	569,753	761,760	1921.....	187,541	641,533
1892.....	779,753	984,438	1907.....	788,872	1,057,088	1922.....	179,068	611,176
1893.....	798,406	874,255	1908.....	527,987	747,102	1923.....	170,169	522,018
1894.....	829,104	835,322	1909.....	420,755	559,604			
1895.....	726,138	1,086,738	1910.....	315,895	388,550	<b>Total.....</b>	<b>21,768,990</b>	<b>†28,944,899</b>

\*35 imperial gallons. †From 1886.

Table 153.—Production of Crude Petroleum in Canada by Provinces, 1922 and 1923

Province	1922				1923			
	Barrels	Value less Bounty	Bounty paid	Total Value	Barrels	Value less Bounty	Bounty paid	Total Value
		\$	\$	\$		\$	\$	\$
New Brunswick.....	7,778	28,359	4,373	32,732	8,826	31,992	3,650	35,642
Ontario—								
Petrolia and Enniskillen.....	64,935	173,375	34,091	207,466	64,159	157,830	33,683	191,513
Oil Springs.....	43,214	115,380	22,687	138,067	39,090	98,898	20,522	119,420
Moore Township.....	7,275	19,424	3,819	23,243	4,790	11,783	2,515	14,298
Sarnia Township.....	3,224	8,607	1,692	10,299	2,387	5,871	1,253	7,124
Plympton Township.....	695	1,856	365	2,221	872	2,146	458	2,604
Bothwell.....	25,681	68,568	13,482	82,050	27,665	68,056	14,524	82,580
Tilbury East.....	127	338	67	405	1,263	3,106	663	3,769
West Dover.....	5,482	14,638	2,878	17,516	6,306	15,513	3,311	18,824
Raleigh Township.....	663	1,771	348	2,119	302	744	159	902
Dutton.....	387	1,033	203	1,236	315	775	165	941
Onondaga.....	489	1,307	257	1,564	237	583	124	708
Moza Township.....	11,959	31,932	6,279	38,211	10,319	25,386	5,418	30,803
Thamesville.....	383	1,024	202	1,226	567	1,396	298	1,694
Dawn Township.....	217	579	114	693				
Elgin Township.....					279	685	146	831
Romney Township.....					849	2,138		2,138
Total for Ontario.....	164,731	439,832	86,484	526,316	159,400	394,910	83,239	478,149
Alberta.....	6,559	51,882	246	52,128	1,943	8,126	101	8,227
Total for Canada.....	179,068	520,073	91,103	611,176	170,169	435,028	86,990	522,018

Table 154.—Imports into Canada and Exports of Petroleum and its Products, 1921, 1922 and 1923

Item	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Crude petroleum in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories..... Gals.	355,300,352	20,010,091	419,559,952	21,602,247	392,185,557	17,449,032
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than .8235 but not less than .775 specific gravity at 60 degrees..... "	222,241	18,737	913,415	76,900	475,842	38,908
Petroleum, crude, not in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories— (From May 12, 1923)..... "					15,922	966
Petroleum (not including crude petroleum imported to be refined or illuminating or lubricating oils) .8235 specific gravity or heavier at 60 degrees temperature..... "	61,176,430	3,786,977	71,891,597	3,014,390	108,506,938	4,206,193
Petroleum, imported by miners or mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments..... "	18,022	3,579	17,672	4,075	32,960	5,913
<b>KEROSENE AND ILLUMINATING OILS</b>						
Coal oil and kerosene, distilled, purified or refined..... "	10,544,281	790,468	3,673,234	314,514	4,118,943	322,434
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon..... "	120,416	62,323	99,497	50,045	42,474	16,296
Coal oil and kerosene, distilled, known as 'engine distillates', .725 specific gravity and heavier, but not heavier than .770 specific gravity at 60 degrees temperature..... "					8,203	962
<b>LUBRICATING OILS</b>						
Lubricating oils, composed wholly or in part of petroleum, and costing less than 20 cents per gallon..... "	2,032,361	374,596	3,898,930	720,223	4,295,635	737,053
Lubricating oils, n.o.p..... "	3,008,095	1,559,965	3,211,124	1,412,473	3,901,048	1,573,897
<b>OTHER OILS</b>						
Gasoline under .725 specific gravity at 60 degrees temperature..... "	21,101,146	4,665,200	24,743,275	5,411,972	35,845,251	5,134,286
Gasoline .725 specific gravity but not heavier than .770 specific gravity at 60 degrees temperature (a)..... "			13,466,769	2,579,643	13,927,843	1,993,596
Gasoline, n.o.p..... "	19,163,561	2,946,258	3,902,204	769,309	177,566	32,750
All other oils, n.o.p..... "	57,687	39,040	144,927	60,469	248,888	86,958
<b>OTHER PRODUCTS OF PETROLEUM</b>						
Grease, axle..... Lb.	3,289,526	296,971	2,851,550	177,575	2,981,849	176,216
Paraffine wax..... "	1,362,188	72,661	870,564	51,032	1,034,921	63,695
Paraffine wax candles..... "	201,906	45,729	199,762	39,299	176,487	32,516
Vaseline and all similar preparations of petroleum for toilet, medicinal or other purposes..... "		219,886		242,743		268,267
Petroleum, products of, n.o.p..... Gals.	13,113,087	1,990,496	1,330,170	298,815	1,712,665	299,388
<b>Total.....</b>		<b>36,882,977</b>		<b>36,816,724</b>		<b>32,439,326</b>
<b>EXPORTS—</b>						
Oil, coal and kerosene, crude..... Gals.	5,384,751	375,820	7,036,627	288,828	2,384,899	138,381
Oil, coal and kerosene, refined..... "	1,466,422	209,282	1,471,947	136,834	1,450,051	139,924
Oil, gasoline and naphtha..... "	762,080	212,638	1,976,244	510,037	1,217,298	263,326
Oil, mineral, n.o.p..... "	124,671	35,890	1,155,865	206,709	1,200,347	223,511
Wax, mineral..... Cwt.	821	7,552	15,615	45,526	66,274	206,575
<b>Total.....</b>		<b>841,182</b>		<b>1,187,934</b>		<b>971,717</b>

(a) From May 24, 1922.

**Petroleum Refinery Statistics.**—As a matter of interest there has been tabulated a record of the crude petroleum and other materials used in the oil refineries of Canada during the past three years and a list showing the quantities and values of the refined products made. Detailed statistics covering Canadian petroleum refineries from 1919 to 1923 will be found in the report on the Manufactures of Non-Metallic Minerals.

**Table 155.—Materials Used and Products Made by the Oil Refineries of Canada, 1921, 1922 and 1923**

Item	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>MATERIALS USED—</b>						
Crude oil, product of Canadian wells..... Imp. gal.	5,899,881	503,714	5,849,442	514,746	5,906,028	458,609
Crude oil, imported..... Imp. gal.	366,122,361	32,794,456	388,289,613	34,638,969	402,904,711	33,184,017
Sulphuric acid (66° Be) (Not made by firm reporting)..... Lb.	57,839,800	674,855	86,398,728	1,058,230	65,922,858	690,152
Sulphur (not used in acid manufacture)..... "	102,540	3,165	84,260	2,407	61,814	1,733
Caustic soda..... "	3,563,907	167,550	3,750,331	174,922	3,084,651	128,421
Litharge..... "	360,758	34,191	518,291	44,906	328,185	28,794
Clay..... "	223,432	3,123	159,840	2,733	480,375	7,929
Other materials.....		673,036		1,792,967		1,935,651
<b>Total.....</b>		<b>34,854,090</b>		<b>38,129,880</b>		<b>36,435,306</b>
<b>PRODUCTS MADE—</b>						
Gasoline..... Imp. gal.	119,887,613	31,026,136	143,959,893	34,428,189	124,156,380	22,153,254
Petroleum spirits..... "	2,055,227	431,649	3,124,828	561,498	1,038,625	144,484
Kerosene..... "	59,082,790	7,537,470	76,521,560	9,628,804	67,396,674	8,774,371
Fuel and gas oils..... "	129,716,045	6,611,261	106,975,976	6,142,927	139,682,570	7,973,766
Lubricating oils..... "	17,345,119	3,854,475	17,185,003	3,143,545	13,741,896	2,696,768
Grease..... Lb.	6,674,262	269,679	8,186,013	156,353	10,599,391	221,420
Petroleum coke..... Tons	65,395	621,912	70,422	597,806	34,020	300,524
Wax and candles..... Lb.	10,777,994	310,267	12,063,768	329,147	10,484,436	484,416
Other products.....		902,554		1,507,552		2,822,503
<b>Total.....</b>		<b>51,565,403</b>		<b>56,495,821</b>		<b>45,571,506</b>

### PHOSPHATE

While no phosphate rock was mined in Canada during 1923, shipments amounting to 30 tons valued at \$600 were made by one producer in the province of Quebec.

Importations, principally Florida phosphate, increased materially during 1923, amounting to 15,845 tons averaging \$5.44 per ton as against 11,515 tons at \$4.90 per ton in 1922.

**Table 156.—Production of Phosphate in Canada, 1886-1923**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	20,495	304,338	1900.....	1,415	7,105	1913.....	385	3,643
1887.....	23,690	319,815	1901.....	1,033	6,280	1914.....	954	7,275
1888.....	22,485	242,285	1902.....	856	4,953	1915.....	217	2,502
1889.....	30,988	316,662	1903.....	1,329	8,214	1916.....	203	2,514
1890.....	31,753	361,045	1904.....	817	4,590	1917.....	149	1,486
1891.....	23,588	241,603	1905.....	1,300	8,425	1918.....	140	1,206
1892.....	11,932	157,424	1906.....	850	6,375	1919.....	24	331
1893.....	8,198	70,942	1907.....	824	6,018	1920.....		
1894.....	6,861	41,166	1908.....	1,596	14,794	1921.....	30	450
1895.....	1,822	9,565	1909.....	998	8,054	1922.....	190	1,796
1896.....	570	3,420	1910.....	1,478	12,578	1923.....	30	600
1897.....	908	3,984	1911.....	621	5,206			
1898.....	733	3,665	1912.....	164	1,640	<b>Total.....</b>	<b>202,626</b>	<b>2,209,943</b>
1899.....	3,000	18,000						

Table 157.—Production in Canada, Imports and Exports of Phosphate, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Quebec.....	30	450	131	1,320	30	600
Ontario.....			59	476		
<b>Total.....</b>	<b>30</b>	<b>450</b>	<b>190</b>	<b>1,796</b>	<b>30</b>	<b>600</b>
IMPORTS—						
Phosphate rock.....	13,711	86,530	11,515	56,353	15,845	86,192
Acid phosphate (a).....	1,545	253,644	1,756	224,577	1,524	189,625
Phosphorus.....	25	24,380	68	55,540	74	68,684
Phosphor tin and bronze.....	105	103,804	135	112,417	223	195,491
Superphosphate (b).....		484,368		403,621		278,301
EXPORTS—Phosphate rock.....						

(a) Probably refined phosphate of lime and phosphate of soda.

(b) Probably for use as fertilizer.

## PYRITES

The production of pyritic ore (iron and copper sulphides), in Canada during 1923 was 28,591 tons, comprising 25,134 tons from Ontario and 3,457 tons from British Columbia. Ontario operators received an average value of \$3.97 per ton for their product while British Columbia producers obtained an average of \$3.85 per ton.

The total sulphur content of the 1923 production was 11,073 tons; the percentage of sulphur varied from 37 per cent to 45 per cent with an average of 38.8 per cent.

No copper-pyritic ore was shipped by the Weedon mines in Quebec in 1923. The Grasselli Chemical Company, Limited, and the Nichols Chemical Company, Limited, were the Ontario shippers: in British Columbia the Hidden Creek mine at Anyox and the Sullivan mine at Kimberley were active during the year.

According to Customs' records 9,670 tons of sulphur contained in pyritic ore was exported.

Table 158.—Production of Pyrites in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	42,906	193,077	1899.....	27,687	110,748	1912.....	81,526	314,081
1887.....	38,043	171,194	1900.....	40,031	155,164	1913.....	158,566	521,181
1888.....	63,479	285,656	1901.....	35,261	130,544	1914.....	228,314	744,503
1889.....	72,225	307,292	1902.....	35,616	138,939	1915.....	286,038	985,190
1890.....	49,227	123,067	1903.....	33,982	127,713	1916.....	309,251	1,084,095
1891.....	67,731	203,193	1904.....	37,180	134,033	1917.....	416,649	1,610,762
1892.....	59,770	179,310	1905.....	33,339	125,486	1918.....	411,616	1,705,219
1893.....	58,542	175,626	1906.....	42,743	169,990	1919.....	176,437	522,704
1894.....	40,527	121,581	1907.....	46,243	212,491	1920.....	174,744	719,110
1895.....	34,198	102,594	1908.....	47,336	224,824	1921.....	33,368	116,326
1896.....	33,715	101,155	1909.....	64,644	222,814	1922.....	18,143	74,303
1897.....	38,910	116,730	1910.....	53,870	187,062	1923.....	28,591	113,020
1898.....	32,218	128,872	1911.....	82,666	365,820	<b>Total.....</b>	<b>3,535,382</b>	<b>13,025,474</b>

Table 159.—Production in Canada, Imports and Exports of Pyrites, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	1,986	10,463				
Ontario.....	27,785	101,306	11,235	39,763	25,134	99,716
British Columbia.....	3,597	4,557	6,908	34,540	3,457	13,304
<b>Total.....</b>	<b>33,368</b>	<b>116,326</b>	<b>18,143</b>	<b>74,303</b>	<b>28,591</b>	<b>113,020</b>
Sulphur content.....	12,213		6,900		11,073	
<b>IMPORTS—</b>						
Brimstone or sulphur, crude or in roll or flour.....	78,762	1,272,619	123,158	1,700,604	135,767	1,803,550
<b>EXPORTS—</b>						
Sulphur contained in pyrites.....	7,875	31,500			9,670	46,514

**Sulphuric Acid.**—Statistics collected from the 9 firms manufacturing sulphuric acid in Canada during 1923 gave the production of this commodity in terms of the standard grades of 50° Be, 60° Bé and 66° Be. For comparative purposes it has been deemed advisable to reduce the first two grades to their equivalent in 66° Bé acid.

Importations of sulphuric acid during 1923 fell off 2,396 tons, while exports increased 10,713 tons over the previous year's records.

Table 160.—Production,\* Imports and Exports of Sulphuric Acid, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Sulphur used.....	10,863	237,460	15,467	316,623	21,564	434,687
Pyrites used.....	19,844	143,778	15,961	81,868	18,615	89,287
Acid made.....	55,902	1,290,785	69,281	1,389,716	79,188	1,408,265
Imports of acid.....	94	10,653	2,687	47,707	291	10,008
Exports of acid.....	2,759	55,775	1,490	29,129	12,203	200,206

\* Expressed in terms of 66° Bé acid. Record includes a small production of oleum and other grades, the strength of which is not specified. An approximate estimate of production in terms of 50° acid will be obtained by increasing these figures by 50 per cent.

## QUARTZ

Shipments of quartz (silica) from Canadian quarries in 1923 totalled 264,076 tons worth \$599,250, an increase of 140 per cent in quantity and 187 per cent in value over sales during the previous year.

Messrs. Silico Limited at St. Canut, Quebec produced a large quantity of ground silica during 1923. The Feldspar Milling Company, Limited, at Toronto, Ontario, also ground a considerable amount of silica; this product was sold to users in eastern Canada.

The increase in production of quartz was due to the resumption of activity in the metallurgical industry as a whole.

Table 161.—Production of Quartz in Canada, 1890-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	200	1,000	1907.....	56,585	124,148	1917.....	216,288	496,182
1891-2.....			1908.....	44,741	52,830	1918.....	268,155	629,813
1893.....	100	500	1909.....	56,924	71,285	1919.....	94,991	527,635
1894-5.....			1910.....	88,205	91,951	1920.....	128,295	467,821
1896.....	10	50	1911.....	60,526	83,865	1921.....	100,350	312,947
1897.....			1912.....	100,242	195,216	1922.....	109,947	208,598
1898.....	284	570	1913.....	78,261	169,842	1923.....	264,076	599,250
1899.....	600	1,260	1914.....	54,148	84,583			
1900-1905.....			1915.....	127,108	205,153	<b>Total.....</b>	<b>2,035,157</b>	<b>4,641,490</b>
1906.....	48,376	65,765	1916.....	136,745	251,226			

Table 162.—Production in Canada, and Imports of Quartz, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	5,994	29,824	10,994	53,023	13,376	68,936
Ontario.....	72,068	220,806	81,528	118,054	225,110	483,285
British Columbia.....	22,288	62,317	17,425	37,521	25,590	47,029
<b>Total.....</b>	<b>100,350</b>	<b>312,947</b>	<b>109,947</b>	<b>208,598</b>	<b>264,076</b>	<b>599,250</b>
<b>IMPORTS—</b>						
Silic.....	1,211	36,041	1,058	25,248	2,303	57,940
Flint.....	5,061	84,761	6,633	92,094	6,327	81,704

## SALT

The Canadian output of salt in 1923 amounted to 206,985 tons, of which quantity 202,397 tons valued at \$1,713,516 was marketed. The sales for 1923 showed an increase of approximately 21,000 tons or 12 per cent in quantity and \$85,000 or 19 per cent in value, over those for the previous year.

Of the total sales 97.7 per cent was from plants operated within the province of Ontario; the balance, or 4,480 tons, was shipped from the Malagash mine in Nova Scotia.

Exports during the year totalled 861 tons as against 740 tons in 1922.

Table 163.—Production of Salt in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	62,359	227,195	1899.....	59,339	254,390	1912.....	95,053	459,582
1887.....	60,173	166,394	1900.....	62,055	279,458	1913.....	100,791	491,280
1888.....	59,070	185,460	1901.....	59,428	262,328	1914.....	107,038	493,648
1889.....	32,832	129,547	1902.....	64,456	292,581	1915.....	119,900	600,226
1890.....	43,754	198,857	1903.....	62,452	297,517	1916.....	132,903	717,653
1891.....	45,621	161,179	1904.....	69,477	321,778	1917.....	138,909	1,047,792
1892.....	45,486	162,041	1905.....	67,340	320,858	1918.....	131,727	1,285,039
1893.....	62,324	195,926	1906.....	76,720	329,130	1919.....	148,301	1,397,929
1894.....	57,199	170,687	1907.....	72,697	342,315	1920.....	209,855	1,544,724
1895.....	52,376	160,455	1908.....	79,975	378,798	1921.....	164,658	1,673,685
1896.....	43,960	169,693	1909.....	84,037	415,219	1922.....	181,794	1,628,323
1897.....	51,348	225,730	1910.....	84,092	409,624	1923.....	202,397	1,713,516
1898.....	57,142	248,639	1911.....	91,582	443,004	<b>Total.....</b>	<b>3,340,020</b>	<b>19,802,200</b>

Table 164.—Production of Salt in Canada, by Grades, 1922 and 1923

Item	1922				1923			
	Quantity manu- factured	Quantity sold	Value of salt sold (not including packages)	Stocks on hand at end of year	Quantity manu- factured	Quantity sold	Value of salt sold (not including packages)	Stocks on hand at end of year
	Tons	Tons	\$	Tons	Tons	Tons	\$	Tons
Table and dairy.....	41,274	41,119	837,994	681	42,371	42,468	764,293	568
Common fine.....	35,758	34,684	329,475	6,853	41,806	36,924	308,039	10,891
Common coarse.....	28,096	28,580	282,336	3,703	31,057	31,282	271,146	2,106
Land salt.....	6,964	6,875	38,840	184	3,744	3,713	17,628	106
Other grades.....	7,636	6,826	72,620	547	7,908	7,911	72,063	563
Brine for chemical works (Salt equivalent sold or used).....	63,710	63,710	67,058	.....	80,099	80,099	280,347	.....
<b>Total.....</b>	<b>183,438</b>	<b>181,794</b>	<b>1,628,323</b>	<b>11,968</b>	<b>206,985</b>	<b>202,397</b>	<b>1,713,516</b>	<b>14,234</b>
<b>Value of packages.....</b>	<b>\$528,895</b>				<b>\$533,822</b>			

Table 165.—Imports, Exports and Consumption of Salt in Canada, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
PRODUCTION.....	164,658	\$ 1,673,685	181,794	\$ 1,628,323	202,397	\$ 1,713,516
IMPORTS—						
Fine, in bulk <sup>1</sup> .....	45,677	294,543	61,913	321,380	65,118	317,773
In bags, barrels <sup>2</sup> .....	33,531	455,962	51,772	596,513	38,799	455,306
All other <sup>3</sup> .....	50,515	274,763	82,185	355,890	67,941	294,526
<b>Total imports.....</b>	<b>129,723</b>	<b>1,025,268</b>	<b>195,870</b>	<b>1,273,783</b>	<b>171,858</b>	<b>1,067,605</b>
EXPORTS.....	348	7,584	740	10,053	861	10,201
CONSUMPTION OF SALT <sup>4</sup> .....	294,033	2,691,369	376,924	2,892,054	373,894	2,770,920

<sup>1</sup>Duty 5 per cents per 100 pounds: <sup>2</sup>Duty 7½ cents per 100 pounds: <sup>3</sup>Free—Imported for use of sea or gulf fisheries.  
<sup>4</sup>Sum of production and imports, less exports.

## SODIUM CARBONATE

Shipments of sodium carbonate crystals during 1923 amounted to 265 tons as against 202 tons shipped in 1922. The deposit near Clinton, Lillooet District, British Columbia was operated during the year.

The production of soda ash from salt brine is carried on in Canada on a very large scale by Brunner-Mond, Ltd. at Amherstburg, Ontario.

Sodium carbonate is used in the manufacture of glass, soap and paper, for bleaching and washing linen, cotton, wool, etc.; dyeing and printing fabrics; preventing the formation of boiler scale and also to a small extent as a reagent in analytical chemistry.

## SODIUM SULPHATE

Natural deposits of sodium sulphate in the province of Saskatchewan were operated during 1923. The total quantity of natural sodium sulphate sold during the year amounted to 733 tons valued at \$10,189 as against 504 tons at \$11,980 in the previous twelve months. The average prices per ton obtained by operators were: crude, \$5, and refined, \$17.47.

In the following table, data showing the production of both natural and artificial sodium sulphate have been tabulated.

Table 166.—Production and Imports of Sodium Sulphate, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
PRODUCTION—		\$		\$		\$
Natural Sodium Sulphate—						
Crude.....	111	1,824	164	1,100	210	1,050
Refined.....	512	17,026	340	10,880	523	9,139
Artificial Sodium Sulphate—						
Sodium sulphate.....	2,418	54,804	2,583	59,804	2,376	57,621
Glauber's salt.....	1,239	42,719	1,905	54,899	2,315	61,446
IMPORTS—						
Soda, bisulphate of, or nitre cake—(From May 12, 1923).....					20,152	91,940
Soda, sulphate of, crude, known as salt cake.....	27,654	690,311	39,472	830,515	30,967	684,604
Glauber's salt.....	139	4,521	172	5,554	521	11,542

## TALC AND SOAPSTONE

**Talc.**—The total quantity of talc mined in Canada during 1923 was 10,235 tons, of which quantity 9,428 tons was milled. Sales of the milled product amounted to 10,366 tons at \$150,507 as compared with 13,195 tons valued at \$188,458 in the preceding year. The average selling prices by grades were similar to those prevailing in 1922, and were as follows; high-grade, \$22, medium, \$13; and low-grade, \$9 per ton.

The Ontario production was derived from deposits in Hastings County. Two deposits were operated in British Columbia; one at Wolf Creek, in the Victoria Mining Division, and the other, the "Gisby Group," near Keefers.

**Soapstone.**—Practically the entire Quebec shipments consisted of soapstone blocks for use in lining the alkali recovery furnaces of sulphate (kraft) pulp mills.

The following quotation is from a report on "*Talc and Soapstone*" by Hugh S. Spence, Mines Branch, Ottawa.

"The soapstone used in Canadian sulphate pulp mills is almost all imported Alberene stone from Virginia. It is difficult to obtain a structurally strong stone that will stand up under the combined attack of heat and alkali in such furnaces, and even the Alberene stone in general use has not a very long life. From six to nine months is stated to be a good average for an Alberene stone lining. The best soapstone for the purpose is obtained from Sweden, but the expense of importation prohibits its use.

The requirements in a soapstone for sulphate pulp furnaces are: fine to medium grain, compactness and homogeneous composition, and freedom from flaws and cracks. It should consist largely of talc, and contain no carbonates (dolomite, calcite) or pyrites. The stone should possess a massive, as opposed to a schistose texture, since schistose soapstone tends to spall readily and has little strength.

The discovery of a soapstone possessing the above characteristics, in Canada, would be of considerable benefit to domestic paper mills, since the quantity used is large and the cost of the imported stone high—from \$5 to \$6 per cubic foot, laid down.

The soapstone bricks used vary in size. Common dimensions are: 12 x 12 x 6 inches; 12 x 6 x 6 inches; 12 x 6 x 3 inches; 18 x 12 x 8 inches; 18 x 12 x 12 inches."

Table 167.—Production of Talc and Soapstone in Canada, 1886-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	50	400	1899.....	450	1,960	1912.....	8,270	23,132
1887.....	100	800	1900.....	1,420	6,365	1913.....	12,250	45,980
1888.....	100	280	1901.....	259	842	1914.....	10,808	40,418
1889.....	195	1,170	1902.....	689	1,804	1915.....	11,885	40,554
1890.....	917	1,239	1903.....	990	2,739	1916.....	13,104	49,423
1891.....			1904.....	840	1,875	1917.....	15,803	76,539
1892.....	1,374	6,240	1905.....	500	1,800	1918.....	18,169	119,197
1893.....	717	1,920	1906.....	1,234	3,030	1919.....	18,642	119,295
1894.....	916	1,640	1907.....	1,534	4,602	1920.....	21,671	166,034
1895.....	475	2,138	1908.....	1,015	3,048	1921.....	10,124	144,565
1896.....	410	1,230	1909.....	4,350	10,300	1922.....	13,195	188,458
1897.....	157	350	1910.....	7,112	22,308	1923.....	10,366	150,507
1898.....	405	1,000	1911.....	7,300	22,100	<b>Total.....</b>	<b>197,837</b>	<b>1,263,182</b>

Table 168.—Production of Talc and Soapstone in Canada and Exports of Talc, 1921, 1922 and 1923

Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Soapstone.....			167	5,800	607	20,843
Talc.....	10,124	144,565	13,028	182,658	9,759	129,664
<b>Total.....</b>	<b>10,124</b>	<b>144,565</b>	<b>13,195</b>	<b>188,458</b>	<b>10,366</b>	<b>150,507</b>
<b>EXPORTS.....</b>	<b>7,115</b>	<b>112,724</b>	<b>9,854</b>	<b>143,938</b>	<b>7,233</b>	<b>99,239</b>

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

The activities in the building and construction industries which were so outstanding in 1922 were fairly well maintained during 1923. Although there was a slight decline in the total value of all structural materials produced during 1923 as compared with the previous year, the quantities in some instances were slightly higher. The total valuation was \$37,751,381 as compared with \$39,534,741 in 1922.

Contracts awarded for building and construction projects in Canada in 1923 as reported by *MacLean Building Review* were valued at \$314,254,300, a decrease of \$17,589,500 from the total for 1922. An analysis of the awards as given in the same publication for the year follows: residential buildings, \$97,645,200; business, \$80,436,800; industrial, \$27,022,000; engineering construction, \$109,150,300.

An examination of the table below shows a considerable falling-off in the number of industrial disputes during 1923 and a consequent decrease in the number of days work lost.

**Table 169.—Statistics of Labour Disputes in the Building Trades in Canada, 1921, 1922 and 1923**

Item	1921	1922	1923
Number of disputes.....	36	21	9
Employees involved.....	4,004	1,831	1,284
Loss in working days.....	153,372	39,667	12,824

**Table 170.—Value of Structural Materials and Clay Products produced in Canada, 1921, 1922 and 1923**

Province	1921	1922	1923
	\$	\$	\$
Prince Edward Island.....	1,433	14,003	4,429
Nova Scotia.....	553,043	602,109	654,191
New Brunswick.....	391,145	417,559	467,118
Quebec.....	9,741,256	11,605,462	11,968,006
Ontario.....	18,615,980	20,259,427	18,896,053
Manitoba.....	1,449,476	1,814,729	1,380,779
Saskatchewan.....	271,280	441,437	178,946
Alberta.....	1,890,790	1,845,990	1,568,760
British Columbia.....	1,823,025	2,534,025	2,633,099
<b>Canada.....</b>	<b>34,737,428</b>	<b>39,534,741</b>	<b>37,751,381</b>

Summary statistics of production, imports, exports and consumption relating to this phase of mineral production have been compiled in the subjoined table. Detailed data for each industry are given under the individual sections.

**Table 171.—Summary Statistics of Structural Materials and Clay Products, 1921, 1922 and 1923**

Item		Production	Imports	Exports	Apparent Consumption
		\$	\$	\$	\$
Cement, portland and puzzolan.....	1921	14,195,143	75,670	650,658	13,620,155
	1922	15,438,481	83,037	699,738	14,821,780
	1923	15,064,661	75,294	824,811	14,315,144
Clay and Clay Products.....	1921	8,857,818	7,517,222	245,835	16,129,205
	1922	11,438,456	6,654,503	311,048	17,781,911
	1923	10,483,016	8,052,209	584,843	17,950,382
Lime.....	1921	2,781,197	19,512	247,112	2,553,597
	1922	3,165,005	27,942	270,724	2,922,223
	1923	3,266,608	55,820	428,286	2,894,142
Sand and gravel.....	1921	2,537,249	114,575	201,711	2,450,113
	1922	3,502,935	175,667	116,121	3,562,481
	1923	3,016,518	247,388	182,750	3,081,156
Slate.....	1921	22,325	267,599	.....	289,924
	1922	14,871	286,095	.....	300,966
	1923	17,289	265,846	.....	283,135
Stone.....	1921	6,343,696	927,708	57,924	7,213,480
	1922	5,974,993	937,905	134,252	6,778,646
	1923	5,903,299	1,081,846	222,240	6,762,895
<b>Total.....</b>	<b>1921</b>	<b>34,737,428</b>	<b>8,922,286</b>	<b>1,403,240</b>	<b>42,256,474</b>
	<b>1922</b>	<b>39,534,741</b>	<b>8,165,149</b>	<b>1,531,883</b>	<b>46,168,007</b>
	<b>1923</b>	<b>37,751,381</b>	<b>9,778,493</b>	<b>2,242,936</b>	<b>45,286,854</b>

## CEMENT

The sales of cement in Canada in 1923 of 7,543,589 barrels exceeded those of the previous year by 599,617 barrels. The total mill output amounted to 7,688,196 barrels, an increase of 1,240,500 barrels from the 1922 total. No puzzolan cement was produced during the year.

Ten plants, having in all a daily capacity of 33,286 barrels, were operated during the year. In addition to these, there were at least thirteen other plants in Canada which were idle during the whole period.

Ontario and Quebec were the principal producing provinces; sales from the former amounted to 3,296,428 barrels averaging \$1.78 per barrel and from the latter 3,173,993 barrels at an average price of \$2. The average selling price f.o.b. plant in the other provinces was as follows: Manitoba, \$2.55; Alberta, \$2.32; and British Columbia, \$3; the Dominion average was \$2.13 per barrel.

The consumption of cement in Canada during the year increased approximately 8 per cent over the quantity used in 1922. It may be noted that the consumption in the twelve months under review was 21 per cent less than recorded for 1913.

Exports in 1923 totalled 493,751 barrels, an increase of 68,614 barrels or 16 per cent over those for 1922. The value of imports of portland cement in the current year decreased slightly to \$75,294.

Table 172.—Production of Cement in Canada, 1887-1923

Year	Barrels	Value	Year	Barrels	Value	Year	Barrels	Value
		\$			\$			\$
1887.....	69,843	81,909	1900.....	417,552	662,910	1913.....	8,658,805	11,019,418
1888.....	50,668	35,593	1901.....	450,394	660,030	1914.....	7,172,480	9,187,924
1889.....	90,474	69,790	1902.....	722,525	1,127,550	1915.....	5,681,032	6,977,024
1890.....	102,216	92,405	1903.....	719,993	1,225,247	1916.....	5,369,560	6,547,728
1891.....	93,479	108,561	1904.....	967,172	1,338,239	1917.....	4,768,488	7,724,246
1892.....	117,408	147,663	1905.....	1,360,732	1,924,014	1918.....	3,591,481	7,076,503
1893.....	158,597	194,015	1906.....	2,128,374	3,170,859	1919.....	4,995,257	9,802,433
1894.....	108,142	144,637	1907.....	2,441,868	3,781,371	1920.....	6,651,980	14,798,070
1895.....	128,294	173,675	1908.....	2,666,333	3,709,954	1921.....	5,752,885	14,195,143
1896.....	149,090	201,651	1909.....	4,067,709	5,345,802	1922.....	6,943,972	15,438,481
1897.....	205,213	275,273	1910.....	4,753,975	6,412,215	1923.....	7,543,589	15,064,661
1898.....	250,209	397,580	1911.....	5,692,915	7,644,937			
1899.....	396,753	633,291	1912.....	7,132,732	9,106,556	<b>Total.....</b>	<b>102,572,189</b>	<b>166,497,358</b>

## PRODUCTION OF CEMENT IN CANADA 1887-1922

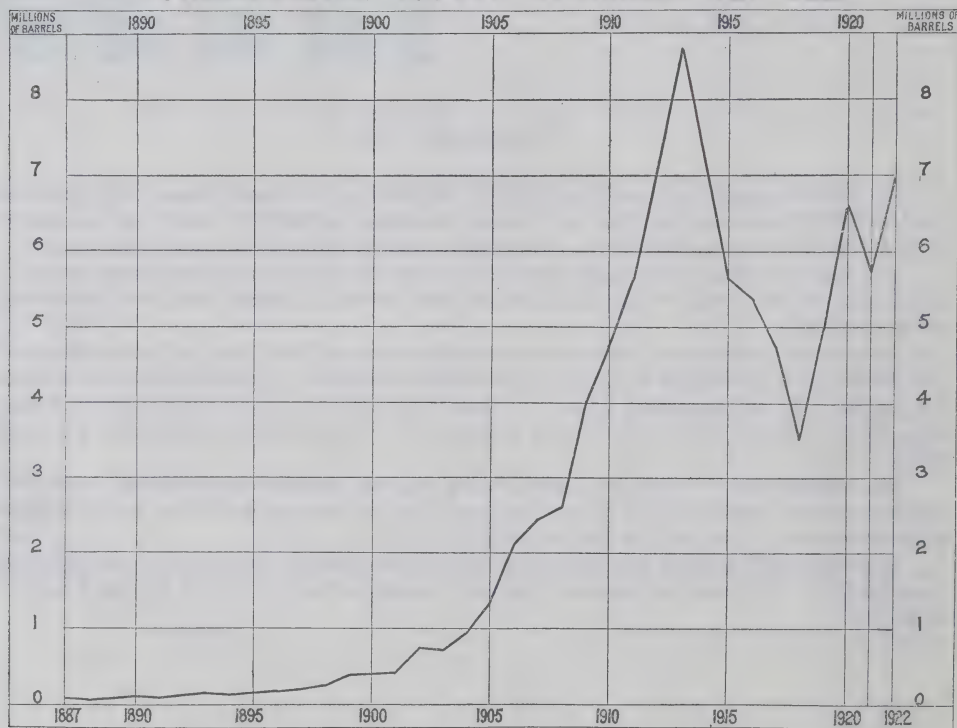
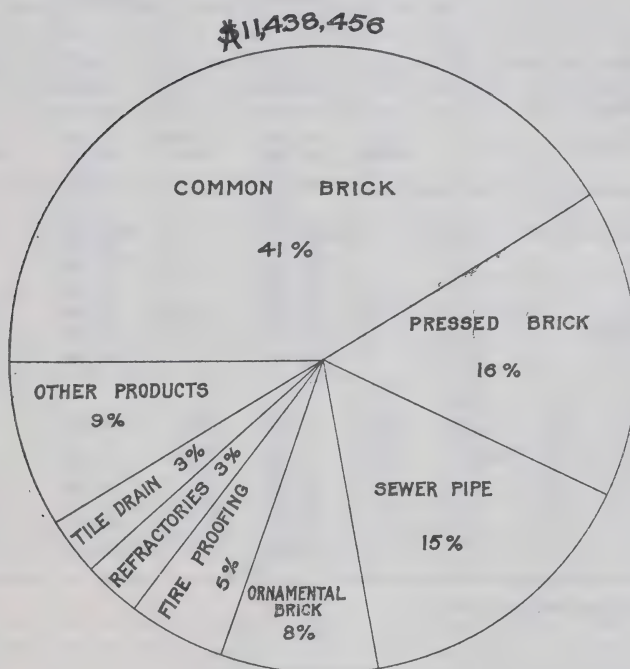


Table 173.—Summary Statistics of Cement in Canada, 1921, 1922 and 1923

	1921		1922		1923	
	Barrels	Value	Barrels	Value	Barrels	Value
		\$		\$		\$
Made from Marl.....	(a) 10,676					
Made from Limestone.....	6,438,980		6,447,696		7,688,196	
<b>Total made.....</b>	<b>6,449,656</b>		<b>6,447,696</b>		<b>7,688,196</b>	
Sold or used.....	5,752,885	14,195,143	6,943,972	15,438,481	7,543,589	15,064,661
Stocks Dec. 31.....	1,603,215		1,106,939		1,251,546	
<b>IMPORTS—</b>						
Portland Cement.....	12,057	75,670	30,914	83,037	17,697	75,294
Manufactures.....		6,945		13,273		86,974
<b>EXPORTS.....</b>	<b>242,345</b>	<b>650,658</b>	<b>425,137</b>	<b>699,738</b>	<b>493,751</b>	<b>824,811</b>
<b>CONSUMPTION.....</b>	<b>5,522,597</b>		<b>6,549,749</b>		<b>7,067,535</b>	

(a) Including puzzolan.

## PRODUCTION IN CANADA OF CLAY PRODUCTS 1922



### CLAY AND CLAY PRODUCTS

Under clay and clay products there have been included statistics relating to the production in Canada from domestic clays, of (a) brick, common, pressed, moulded and ornamental and hollow building brick or blocks; (b) drain-tile and sewerpipe (c) pottery (d) architectural terra cotta (e) kaolin or china clay (f) refractories—fireclay, firebrick, and fireclay blocks and shapes. For statistics on production in Canada from imported clays, see Tables 327 to 331.

The total value of clay products produced in Canada during 1923 was \$10,483,016 as compared with \$11,438,456 in 1922 and \$8,857,818 in 1921.

Table 174.—Production in Canada, Imports and Exports of Clay and Clay Products, 1921, 1922 and 1923

	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>SALES OF PRODUCTS MADE FROM DOMESTIC CLAYS—</b>						
Common brick..... M	220,438	3,567,503	294,919	4,714,658	250,565	3,884,474
Pressed brick..... M	80,947	1,738,293	90,578	1,839,549	73,400	1,461,483
Fireproofing..... M	452,296	542,611	4,893	542,611	379,805	379,805
Hollow building blocks..... M	3,627	177,273	17,866	448,674	7,720	620,329
Kaolin..... Tons.	124	1,888	1,197	17,866	163	2,369
Ornamental brick..... M	1,995	50,576	41,852	865,664	64,682	1,355,360
Paving brick..... "			151	5,972		
Terra-cotta lumber.....		134,193		188,789		209,471
Pottery.....		231,262		266,391		229,547
Refractories—						
Fireclay..... Tons.	2,931	29,851	10,196	55,185	2,685	24,158
Firebrick..... M	4,502	242,462	6,705	251,776	6,122	295,037
Other products.....		91,685		67,588		81,345
Sewerpipe..... Tons.		1,666,584	75,932	1,766,347	70,252	1,616,324
Tile, drain..... M		473,952	14,731	407,386	10,599	323,314
<b>Total.....</b>		<b>8,857,818</b>		<b>11,438,456</b>		<b>10,483,016</b>
<b>IMPORTS—</b>						
Bath brick.....		1,315		1,043		1,938
Building brick..... M	4,269	126,765	7,468	174,321	5,381	140,441
Building blocks.....		120,980		79,689		77,972
Brick, fire, chromic (May 12, 1923).....						4,000
Clays—						
China, ground and unground..... Tons.	8,130	138,775	12,898	173,988	12,120	242,860
Fire, " " " "..... "	31,282	148,059	30,792	138,995	53,506	223,628
Pipe " " " ".....		866		2,864		1,161
Other clays.....		72,451		65,422		99,515
Drain tile, unglazed.....		5,815		692		2,041
Drain and sewerpipe.....		41,107		61,397		61,868
Earthen and chinaware.....		5,023,211		4,641,474		5,067,489
Firebrick (a).....		630,132		611,564		970,324
Firebrick, n.o.p.....		445,053		361,338		610,243
Magnesite brick.....		61,728		56,561		120,453
Silica brick.....		229,400		131,517		216,642
Paving brick..... M	1,323	41,523	1,766	45,686	3,243	90,767
Other clay manufactures.....		162,417		117,952		241,320
<b>Total.....</b>		<b>7,249,597</b>		<b>6,664,503</b>		<b>8,172,662</b>
<b>EXPORTS—</b>						
Building brick..... M	2,136	29,778	2,418	31,383	4,069	42,742
Clay—						
Unmanufactured..... Cwt.	2,095	885	2,589	1,777	11	52
Manufactures.....		80,009		104,933		109,957
Earthenware.....		135,163		172,955		432,092
<b>Total.....</b>		<b>245,835</b>		<b>311,048</b>		<b>584,843</b>
<b>CONSUMPTION.....</b>		<b>15,861,580</b>		<b>17,791,911</b>		<b>18,070,835</b>

(a) Duty free, of a kind not made in Canada.

Table 175.—Production of Clay Products in Canada, from Domestic Clays, by Provinces, 1921, 1922 and 1923

Province	1921		1922		1923	
	Sold or used	Per cent of total value	Sold or used	Per cent of total value	Sold or used	Per cent of total value
	\$		\$		\$	
Prince Edward Island.....			3,975	0.03		
Nova Scotia.....	361,761	4.08	427,643	3.74	413,974	3.95
New Brunswick.....	66,600	0.75	75,425	0.66	62,587	0.60
Quebec.....	1,744,760	19.69	2,494,236	21.81	2,439,598	23.28
Ontario.....	5,183,125	58.55	6,944,218	60.71	6,270,615	59.82
Manitoba.....	208,982	2.35	210,740	1.84	160,134	1.53
Saskatchewan.....	166,244	1.87	134,704	1.18	119,405	1.13
Alberta.....	710,477	8.02	700,063	6.12	590,565	5.63
British Columbia.....	415,869	4.69	447,452	3.91	426,138	4.06
<b>Canada.....</b>	<b>8,857,818</b>	<b>100.00</b>	<b>11,438,456</b>	<b>100.00</b>	<b>10,483,016</b>	<b>100.00</b>

**Common Brick.**—The sales of common brick in Canada during 1923 totalled 250,565 thousand valued at \$3,884,474, or an average of \$15.50 per thousand. In 1922, the production was 294,919 thousand at \$4,714,658, with an average selling value for the Dominion of \$15.99 per thousand.

Slight advances in sales of common brick occurred in New Brunswick, Saskatchewan and British Columbia, while there was a falling-off in the production from the other provinces.

Calculated on a percentage basis, the common brick sold during the year under review was as follows: Nova Scotia 2.4; New Brunswick 0.8; Quebec 39.4; Ontario 46.9; Manitoba 3.6; Saskatchewan 1.2; Alberta 3.2; and British Columbia, 2.5.

Table 176.—Production of Common Brick, in Canada, by Provinces, 1922 and 1923

Province	1922				1923			
	Manu- factured	Sold or used			Manu- factured	Sold or used		
		Quantity	Value	Per M.		Quantity	Value	Per M.
	M	M	\$	\$	M	M	\$	\$
Prince Edward Island.....	350	300	3,975	13.25				
Nova Scotia.....	12,233	11,364	131,686	11.59	7,050	6,079	71,072	11.69
New Brunswick.....	2,631	2,087	33,425	16.02	1,933	2,142	34,663	16.18
Quebec.....	114,670	103,087	1,520,430	14.75	100,679	98,795	1,421,376	14.39
Ontario.....	157,682	148,831	2,614,120	17.56	132,787	117,390	2,008,614	17.11
Manitoba.....	8,098	9,945	166,023	16.70	11,727	8,961	142,896	15.95
Saskatchewan.....	1,111	2,153	27,058	12.57	4,053	2,997	35,032	11.69
Alberta.....	13,335	11,995	137,184	11.44	6,065	8,023	89,029	11.10
British Columbia.....	5,698	5,157	80,757	15.66	7,163	6,178	81,792	13.24
<b>Canada.....</b>	<b>315,808</b>	<b>294,919</b>	<b>4,714,658</b>	<b>15.99</b>	<b>271,457</b>	<b>250,565</b>	<b>3,884,474</b>	<b>15.50</b>

**Pressed Brick.**—Sales of pressed brick in Canada during 1923 totalled 73,400 thousand valued at \$1,461,483 as compared with 90,578 thousand at \$1,839,549 in the previous twelve months. Ontario was the chief producer of this commodity accounting for 78.5 per cent of the Dominion total. The other provinces, in order of production ranked as follows: Alberta, Quebec, British Columbia, Saskatchewan and Manitoba.

Decreases in Quebec and Ontario of 27.2 per cent and 86.7 per cent, respectively, were responsible for the falling-off in the total sales for the Dominion. Slight advances in production occurred in Alberta and British Columbia.

Table 177.—Production of Pressed Brick, in Canada, by Provinces, 1922 and 1923

Province	1922				1923			
	Manu- factured	Sold or used			Manu- factured	Sold or used		
		Quantity	Value	Per M.		Quantity	Value	Per M.
	M	M	\$	\$	M	M	\$	\$
Quebec.....	16,790	15,201	362,556	23.85	5,819	4,319	118,705	28.68
Ontario.....	65,479	66,484	1,289,278	19.39	66,703	57,642	1,142,988	19.83
Manitoba.....		71	1,768	25.25				
Saskatchewan.....	948	1,101	41,557	37.74	780	1,091	33,291	30.51
Alberta.....	6,552	6,619	98,803	14.93	9,283	8,925	109,066	12.22
British Columbia.....	1,586	1,102	45,587	41.37	2,176	1,423	57,433	40.36
<b>Canada.....</b>	<b>91,355</b>	<b>90,578</b>	<b>1,839,549</b>	<b>20.31</b>	<b>84,761</b>	<b>73,400</b>	<b>1,461,483</b>	<b>19.91</b>

Table 178.—Production of Building Brick (Common and Pressed), 1886-1906

Year	Value	Year	Value	Year	Quantity	Value
	\$		\$		M	\$
1886.....	873,600	1893.....	1,800,000	1900.....		2,275,000
1887.....	986,689	1894.....	1,800,000	1901.....		2,400,000
1888.....	1,036,746	1895.....	1,670,000	1902.....		2,593,000
1889.....	1,273,884	1896.....	1,600,000	1903.....		2,832,000
1890.....	1,266,982	1897.....	1,600,000	1904.....		2,983,000
1891.....	1,061,536	1898.....	1,900,000	1905.....	523,820	3,933,925
1892.....	1,251,934	1899.....	2,195,000	1906.....	523,390	4,102,590
<b>Total.....</b>						<b>41,435,886</b>

Table 179.—Production of Common Brick, 1907-1923

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M.	\$		M.	\$		M.	\$
1907.....	439,016	3,455,524	1914.....	457,514	3,653,861	1920.....	303,343	4,835,996
1908.....	353,261	2,611,554	1915.....	234,733	1,755,187	1921.....	220,438	3,567,503
1909.....	539,229	4,212,424	1916.....	237,035	1,826,844	1922.....	294,919	4,714,658
1910.....	627,715	5,105,354	1917.....	210,631	1,999,465	1923.....	250,565	3,884,474
1911.....	645,551	5,420,890	1918.....	164,970	1,879,811	<b>Total.....</b>	<b>6,708,009</b>	<b>65,701,512</b>
1912.....	769,192	7,010,375	1919.....	291,470	3,850,219			
1913.....	668,427	5,917,373						

Table 180.—Production of Pressed Brick, 1907-1923

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M.	\$		M.	\$		M.	\$
1907.....	78,922	794,722	1914.....	93,635	1,115,556	1920.....	85,137	2,004,537
1908.....	53,481	517,180	1915.....	49,817	492,774	1921.....	80,947	1,738,293
1909.....	57,265	630,677	1916.....	44,947	492,355	1922.....	90,578	1,839,549
1910.....	67,895	807,294	1917.....	46,409	653,153	1923.....	73,400	1,461,483
1911.....	87,351	1,094,582	1918.....	40,147	639,083	<b>Total.....</b>	<b>1,266,337</b>	<b>19,653,987</b>
1912.....	125,180	1,609,354	1919.....	74,424	1,304,162			
1913.....	116,802	1,458,738						

**Moulded and Ornamental Brick.**—The total quantity of moulded and ornamental brick produced in Canada during 1923, was 64,682 thousand valued at \$1,355,360. This production consisted of (a) moulded and ornamental amounting to 236 thousand and (b) tapestry and rug brick, 64,446 thousand; average values per thousand were \$44.71 and \$20.86, respectively. The average price for the Dominion was \$20.95 per thousand, ranging from \$15 per thousand in Nova Scotia to \$40.03 in British Columbia. There was no production of this commodity reported by firms in New Brunswick and Manitoba.

**Table 181.—Production of Moulded and Ornamental Brick in Canada, by Provinces, 1922 and 1923**

Province	1922				1923			
	Manu- factured	Sold or used			Manu- factured	Sold or used		
		Quantity	Value	Per M.		Quantity	Value	Per M.
	M	M	\$	\$	M	M	\$	\$
Nova Scotia.....					600	400	6,000	15-00
Quebec.....	82	84	3,098	37-32	17,933	13,505	341,337	25-27
Ontario.....	47,440	41,441	854,762	20-62	55,937	49,682	975,608	19-64
Manitoba.....					68			
Saskatchewan.....		76	1,518	20-24	180	133	4,988	37-50
Alberta.....	255	251	6,286	25-04	438	554	11,093	20-02
British Columbia.....					793	408	16,334	40-03
<b>Canada.....</b>	<b>47,778</b>	<b>41,852</b>	<b>865,664</b>	<b>20-68</b>	<b>75,949</b>	<b>64,682</b>	<b>1,355,360</b>	<b>20-95</b>

**Paving Brick.**—There was no production of paving brick in Canada during 1923. In 1922, for the first time in six years, clay paving brick was produced in Canada at Clayburn, B.C., from local deposits of clay. The year's sales totalled 151 thousand bricks valued at \$5,972. Production of this commodity in 1916 amounted to 1,590 thousand valued at \$30,144; plants were operated during that year at West Toronto, Ont. and Clayburn, B.C.

**Table 182.—Production of Paving Brick\*, 1897-1923**

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$		M	\$
1897.....	4,568	45,670	1905.....	4,500	54,000	1913.....	4,208	75,669
1898.....			1906.....	3,000	45,000	1914.....	2,707	49,627
1899.....	5,300	42,550	1907.....	3,618	72,354	1915.....	1,228	20,694
1900.....	2,710	26,950	1908.....	3,720	59,456	1916.....	1,590	30,144
1901.....	3,689	37,000	1909.....	3,760	67,408	1917-1921.....		
1902.....	4,211	42,000	1910.....	4,215	78,980	1922.....	151	5,972
1903.....	3,789	45,288	1911.....	5,220	79,444	1923.....		
1904.....	4,436	55,450	1912.....	4,580	85,989	<b>Total.....</b>	<b>71,200</b>	<b>1,019,645</b>

\*Figures prior to 1907 compiled by the Ont. Bureau of Mines.

**Hollow Building Brick.**—The production of hollow building brick or blocks in Canada during 1923 amounted to 7,720 thousand valued at \$620,329 as compared with 4,892 thousand at \$448,674 in the previous year, an increase of 57·8 per cent in quantity and 38·2 per cent in value. Substantial increases marked production in the provinces of Quebec, Ontario and British Columbia.

Separate statistics were obtained of the quantity and value of interlocking tile produced, and the records showed sales of 3,238 thousand at an average value of \$81.62 per thousand.

**Table 183.—Production of Hollow Building Brick or Blocks, in Canada, by Provinces, 1922 and 1923**

Province	1922			1923		
	Manu- factured	Sold or used		Manu- factured	Sold or used	
		Quantity	Value		Quantity	Value
	M	M	\$	M	M	\$
Nova Scotia.....				354	294	26,074
Quebec.....	486	515	41,784	2,589	1,929	156,112
Ontario.....	2,276	2,017	272,118	4,523	4,168	309,605
Manitoba.....	500	860	15,310	247	137	15,478
Saskatchewan.....	450	495	37,550	2,600	215	19,650
Alberta.....	1,041	707	40,050	193	400	41,657
British Columbia.....	374	298	41,862	660	577	51,753
<b>Canada.....</b>	<b>5,127</b>	<b>4,892</b>	<b>448,674</b>	<b>11,166</b>	<b>7,720</b>	<b>620,329</b>

**Fireproofing and Hollow Porous Blocks.**—The total value of fireproofing and hollow porous blocks produced in Canada during 1923, was \$379,805, as compared with \$542,611 in 1922. Records for Ontario and Quebec showed an increase in production value, while the Alberta sales fell off very materially.

**Table 184.—Production of Fireproofing and Hollow Porous Blocks in Canada, by Provinces, 1922 and 1923**

Province	1922	1923
	\$	\$
Nova Scotia.....	3,654	.....
Quebec.....	160,471	66,868
Ontario.....	274,618	284,039
Manitoba.....	27,639	.....
Alberta.....	76,229	28,898
<b>Canada.....</b>	<b>542,611</b>	<b>379,805</b>

**Pottery from Canadian Clay.**—Sales of pottery, made from domestic clay during 1923 were valued at \$229,547, a decrease of \$36,844 or 13·8 per cent from previous year's records.

Four firms (using domestic clay), produced pottery in Canada in the year under review. Stoneware, Rockingham ware, flower pots, etc., were made at St. John, N.B., partly from Nova Scotia clay. Rockingham ware was also produced at Medicine Hat, Alta., from Saskatchewan clay. Flower pots were produced in the following localities, Medicine Hat, Alta., from Saskatchewan clay; and Toronto, Ont., and Hamilton, Ont., from local clay. (For production from imported clays, see Table 331.)

**Table 185.—Production of Pottery from Domestic Clays in Canada, by Provinces, 1921, 1922 and 1923**

Province	1921	1922	1923
	\$	\$	\$
New Brunswick.....	40,000	42,000	26,547
Ontario.....	69,984	88,889	78,000
Alberta.....	121,278	135,502	125,000
<b>Canada.....</b>	<b>231,262</b>	<b>266,391</b>	<b>229,547</b>

**Table 186.—Production of Pottery from Domestic Clays in Canada, 1888-1923**

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
1888.....	27,750	1897.....	129,629	1906.....	150,000	1915.....	64,900
1889.....	*	1898.....	214,675	1907.....	253,808	1916.....	61,000
1890.....	195,242	1899.....	185,000	1908.....	200,541	1917.....	122,878
1891.....	258,844	1900.....	200,000	1909.....	285,285	1918.....	130,242
1892.....	265,811	1901.....	200,000	1910.....	280,924	1919.....	185,474
1893.....	213,186	1902.....	200,000	1911.....	102,496	1920.....	209,171
1894.....	162,144	1903.....	200,000	1912.....	43,955	1921.....	231,262
1895.....	151,588	1904.....	140,000	1913.....	53,583	1922.....	266,391
1896.....	163,427	1905.....	120,000	1914.....	35,371	1923.....	229,547
<b>Total.....</b>							<b>5,904,141</b>

\*Not available.

**Kaolin.**—Up to the present date the only deposit of kaolin which has been developed in Canada, is located at St. Remi d'Amherst, near Huberdeau, Quebec. This deposit was operated during the first part of 1923, and 163 tons of white clay was shipped. In 1922, shipments were considerably higher amounting to 1,197 tons.

Table 187.—Production of Kaolin in Canada, 1912-1923

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1912.....	20	160	1916.....	1,750	17,500	1920.....	683	15,022
1913.....	500	5,000	1917.....	533	9,594	1921.....	124	1,888
1914.....	1,000	10,000	1918.....	863	19,299	1922.....	1,197	17,866
1915.....	1,300	13,000	1919.....	759	13,744	1923.....	163	2,369
<b>Total.....</b>							<b>8,892</b>	<b>125,442</b>

**Architectural Terra Cotta.**—Under this heading there is also included floor and wall tile. The total Canadian production came from Ontario, Quebec, and British Columbia, in the order named. Sales were valued at \$209,471, as compared with \$188,789 in 1922, an increase of \$20,682 or 11 per cent.

Table 188.—Production of Architectural Terra Cotta and Tile, other than Drain, in Canada, by Provinces, 1921, 1922 and 1923

Province	1921	1922	1923
	\$	\$	\$
Quebec.....	13,260	19,278	28,082
Ontario.....	120,594	169,297	181,376
British Columbia.....	339	214	13
<b>Canada.....</b>	<b>134,193</b>	<b>188,789</b>	<b>209,471</b>

**Drain Tile and Sewer Pipe**—(a) **Drain Tile.**—The demand for drain tile in Canada during 1923 being somewhat below normal, there was a consequent decrease in the production of this commodity. Sales during the year totalled 10,599 thousand valued at \$323,314, as compared with 14,731 thousand at \$407,386 in 1922.

Imports of drain tile, unglazed, into Canada in 1923 were valued at \$2,041.

(b) **Sewerpipe.**—Sales of sewerpipe in Canada during 1923 were valued at \$1,616,324 as compared with \$1,766,347 in the previous year. Ontario was the principal producer accounting for 91 per cent of the total, the other provinces following in order of production—Quebec, Nova Scotia, Alberta and British Columbia.

According to Customs' records drain and sewerpipe importations were valued at \$61,868 in 1923 and \$61,397 in 1922.

Table 189.—Production of Sewer Pipe in Canada, 1888-1923

Year	Value	Year	Value	Year	Tons	Value
	\$		\$			\$
1888.....	266,320	1901.....	248,115	1914.....		1,104,499
1889.....	*	1902.....	301,965	1915.....		799,446
1890.....	348,000	1903.....	317,970	1916.....		716,287
1891.....	227,300	1904.....	440,894	1917.....		783,762
1892.....	367,660	1905.....	382,000	1918.....	36,574	699,774
1893.....	350,000	1906.....	530,045	1919.....	62,821	1,074,146
1894.....	250,325	1907.....	667,100	1920.....	58,887	1,549,090
1895.....	257,045	1908.....	514,362	1921.....		1,666,584
1896.....	153,875	1909.....	645,722	1922.....	75,932	1,766,347
1897.....	164,250	1910.....	774,110	1923.....	70,252	1,616,324
1898.....	181,717	1911.....	812,716			
1899.....	161,546	1912.....	884,641			
1900.....	231,525	1913.....	1,035,906	<b>Total.....</b>		<b>22,291,368</b>

\*Data not available.

Table 190.—Production of Drain Tile in Canada, 1891-1923

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
*1891.....	90,000	1900.....	225,000	1908.....	298,561	1916.....	359,387
1892.....	100,000	1901.....	250,000	1909.....	408,440	1917.....	434,708
1893.....	190,000	1902.....	250,000	1910.....	370,008	1918.....	499,340
*1894.....	280,000	1903.....	275,000	1911.....	339,812	1919.....	616,510
1895.....	210,000	1904.....	260,000	1912.....	357,862	1920.....	562,652
1896.....	225,000	1905.....	260,000	1913.....	338,552	1921.....	473,952
1897.....	225,000	1906.....	290,000	1914.....	366,340	1922.....	407,386
1898.....	225,000	1907.....	260,609	1915.....	355,296	1923.....	323,314
1899.....	225,000					<b>Total.....</b>	<b>10,352,729</b>

\*1891-1894 (inclusive), as reported by Ontario Bureau of Mines.

Table 191.—Production of Drain Tile and Sewer Pipe, in Canada, by Provinces, 1922 and 1923

Province	1922				1923			
	Drain Tile		Sewer Pipe		Drain Tile		Sewer Pipe	
	M	\$	Tons	\$	M	\$	Tons	\$
Nova Scotia.....	106	3,909	13,174	243,455	62	2,423	10,733	200,707
Quebec.....	318	13,988	12,290	312,737	170	10,312	12,268	294,437
Ontario.....	13,790	368,180	42,679	973,824	9,661	283,662	40,562	925,858
Manitoba.....					30	1,760		
Saskatchewan.....	85	6,200			65	4,550		
Alberta.....	59	3,480	5,446	170,229	103	5,414	6,035	175,163
British Columbia.....	373	11,629	2,343	66,102	508	15,193	654	20,164
<b>Canada.....</b>	<b>14,731</b>	<b>407,386</b>	<b>75,932</b>	<b>1,766,347</b>	<b>10,599</b>	<b>323,314</b>	<b>70,252</b>	<b>1,616,324</b>

**Refractories (a) Fireclay.**—Sales of fireclay or refractory clay sold as such, in Canada, during 1923, were valued at \$24,158. The provinces of Nova Scotia, Ontario, Saskatchewan and British Columbia produced this commodity during the year under review.

(b) **Firebrick.**—The production of firebrick in Canada from domestic clay, during 1923 totalled 6,122 thousand valued at \$295,037 as against 6,705 thousand at \$251,776 in the previous year. Nova Scotia and British Columbia were the principal producers accounting for 76.6 per cent of the Dominion total.

Imports of firebrick into Canada during 1923 consisting of magnesite brick, silica brick, firebrick of a kind not made in Canada, and firebrick, n.o.p., were appraised at \$1,917,662.

(c) **Fireclay Blocks and Shapes.**—Fireclay blocks and shapes sold during 1923 were valued at \$81,345, an increase of \$13,757 or 12 per cent over the sales in the preceding year. These commodities were produced in Nova Scotia, Ontario, Saskatchewan, Alberta and British Columbia, from domestic clays. In addition to this production firebrick, stove linings, etc. were made from imported American clays by a number of firms in Canada. (See Table 331.)

Table 192.—Production of Fire Clay in Canada, 1889-1923

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	Tons	\$		Tons	\$		Tons	\$
1889.....	400	4,800	1901.....	3,979	5,920	1913.....	3,345	14,018
1890.....			1902.....	2,741	4,283	1914.....	2,171	12,875
1891.....	250	750	1903.....	2,639	3,523	1915.....	2,328	12,065
1892.....	1,991	4,467	1904.....	5,972	17,466	1916.....	9,206	30,767
1893.....	540	700	1905.....	5,088	13,917	1917.....	10,534	49,455
1894.....	539	2,167	1906.....	6,559	18,522	1918.....	8,732	44,351
1895.....	1,329	3,492	1907.....			1919.....	4,600	24,163
1896.....	842	1,805	1908.....	1,984	8,121	1920.....	8,321	44,091
1897.....	2,118	5,759	1909.....	4,405	12,390	1921.....	2,931	29,851
1898.....	670	1,680	1910.....	1,425	5,863	1922.....	10,196	55,185
1899.....	599	1,295	1911.....	7,532	24,128	1923.....	2,685	24,158
1900.....	1,245	4,130	1912.....	6,307	24,343	<b>Total.....</b>	<b>124,203</b>	<b>510,500</b>

Table 193.—Production of Fire Brick and Other Fire-Clay Products in Canada, from Domestic Clays, 1907-1923

Year	Fire brick		Other fireclay products	Year	Fire brick		Other fireclay products
	Quantity	Value	Value		Quantity	Value	Value
	M	\$	\$		M	\$	\$
1907.....	4,323	113,322	13,000	1916.....	5,689	147,757	56,038
1908.....	2,416	70,429	31,752	1917.....	8,192	199,171	77,885
1909.....	1,059	32,742	33,000	1918.....	7,192	248,884	111,589
1910.....	1,375	29,352	15,000	1919.....	5,610	268,756	96,435
1911.....	2,368	44,122	20,830	1920.....	7,293	375,230	54,792
1912.....	3,430	67,192	34,050	1921.....	4,502	242,462	91,685
1913.....	3,667	86,164	42,556	1922.....	6,705	251,776	67,588
1914.....	2,816	72,299	22,394	1923.....	6,122	295,037	81,345
1915.....	2,896	68,700	29,928				
				<b>Total.....</b>	<b>75,655</b>	<b>2,613,395</b>	<b>884,917</b>

Table 194.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1922

Province	Fire clay		Fire brick			Fire clay blocks and shapes
	Sold or used		Manu- factured	Sold or used		Sold or used
	Quantity	Value		Quantity	Value	
	Tons	\$	M	M	\$	\$
Nova Scotia.....	327	1,746	960	567	42,518	675
New Brunswick.....	117	580				41,448
Quebec.....	275	4,068	948	853	35,064	
Ontario.....	417	3,811	392	396	17,010	
Manitoba.....	8,075	32,300				
Saskatchewan.....	985	12,680	5,436	4,889	157,184	25,465
British Columbia.....						
<b>Canada.....</b>	<b>10,196</b>	<b>55,185</b>	<b>7,736</b>	<b>6,705</b>	<b>251,776</b>	<b>67,588</b>

Table 195.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1923

Province	Fire clay		Fire brick			Fire clay blocks and shapes
	Sold or used		Manu- factured	Sold or used		Sold or used
	Quantity	Value		Quantity	Value	
	Tons	\$	M	M	\$	\$
Nova Scotia.....	1,189	5,448	2,260	1,811	100,700	1,550
New Brunswick.....			16	19	1,377	
Quebec.....	98	1,475	803	892	44,772	34,618
Ontario.....	324	2,729	525	450	17,985	1,180
Manitoba.....			50	65	1,630	3,610
Saskatchewan.....	1,074	14,506	3,554	2,885	128,573	40,387
Alberta.....						
British Columbia.....						
<b>Canada.....</b>	<b>2,685</b>	<b>24,158</b>	<b>6,388</b>	<b>6,122</b>	<b>295,037</b>	<b>81,345</b>

## LIME

The production of lime in Canada during 1923 totalled 10,035,319 bushels valued at \$3,266,608 as compared with 8,972,971 bushels at \$3,165,005 in the previous year. The average price obtained for quicklime in the twelve months under review, was 31 cents per bushel, while hydrated lime sold for \$12.13 per ton. There was the customary variation in prices throughout the Dominion, quicklime ranging in price from 17 cents a bushel in Nova Scotia to 60 cents in British Columbia, while hydrated lime sold from \$10.27 per ton in Quebec to \$12.46 in Ontario.

Importations of lime into Canada during the current year were considerably in advance of those in 1922 and amounted to 4,989 tons. Exports were recorded at 24,326 tons or an increase of 9,996 tons over the previous year's figures.

Table 196.—Production of Lime in Canada, 1886-1923

Year	Value	Year	Bushels	Value	Year	Bushels	Value
	\$			\$			\$
1886.....	283,755	1899 (Estimated).....		800,000	1912.....	8,475,839	1,844,849
1887.....	394,859	1900 ".....		800,000	1913.....	7,558,484	1,609,398
1888.....	339,951	1901 ".....		830,000	1914.....	7,028,582	1,360,628
1889.....	362,848	1902 ".....		892,000	1915.....	5,047,244	1,015,702
1890.....	412,308	1903 ".....		900,000	1916.....	5,493,250	1,091,463
1891.....	251,215	1904 ".....		780,000	1917.....	6,567,170	1,558,487
1892.....	411,270	1905 ".....		750,000	1918.....	6,363,951	1,876,025
1893 (Estimated).....	900,000	1906.....	5,230,406	1,009,177	1919.....	7,147,504	2,310,607
1894.....	900,000	1907.....	4,755,316	974,595	1920.....	9,427,334	3,818,553
1895.....	700,000	1908.....	3,601,468	712,947	1921.....	6,879,066	2,781,197
1896.....	650,000	1909.....	5,592,924	1,132,756	1922.....	8,972,971	3,165,005
1897.....	650,000	1910.....	5,848,146	1,137,079	1923.....	10,035,319	3,266,608
1898 (Estimated).....	650,000	1911.....	7,533,525	1,517,599			
					<b>Total.....</b>		<b>44,849,881</b>

Table 197.—Production of Lime in Canada, 1922 and 1923, showing Purpose for which Sold or Used

Purpose for which sold or used	1922				1923			
	Quicklime		Hydrated lime		Quicklime		Hydrated lime	
	Bushels	Value*	Tons	Value*	Bushels	Value*	Tons	Value*
		\$		\$		\$		\$
Building trades.....	1,334,769	450,861	34,500	440,433	1,538,188	530,342	27,110	340,746
Chemical works.....					2,513,848	697,233	1,838	13,108
Glass works.....	1,772,786	605,547	2,194	18,697	75,716	22,206	300	3,362
Smelters.....	169,329	69,450			242,366	80,787		
Pulp and paper mills.....	2,044,777	498,550	3,173	32,513	1,993,101	496,306	2,945	27,672
Sugar refineries.....	275,685	100,821			446,970	76,100		
Tanneries.....	43,979	15,145	3	37	52,544	20,749	25	250
Agricultural uses (fertilizers).....	38,671	4,450	1,083	10,384	36,557	3,794	1,033	9,501
Dealers (uses unspecified).....	1,363,309	621,493	3,418	37,948	1,130,676	533,624	18,371	230,785
Other consumers.....	654,723	256,409	252	2,267	526,353	180,748	143	2,295
<b>Total sold or used.....</b>	<b>7,698,028</b>	<b>2,622,726</b>	<b>44,623</b>	<b>542,279</b>	<b>8,556,319</b>	<b>2,638,889</b>	<b>51,765</b>	<b>627,719</b>

\*Total selling value at kiln.

Table 198.—Production of Lime in Canada, by Provinces, 1921, 1922 and 1923

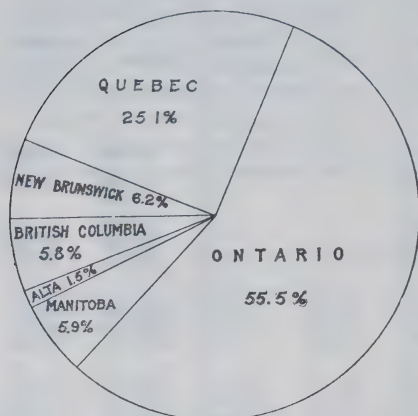
Province		Quicklime		Hydrated Lime		Total	
		Sold or used		Sold or used		Sold or used	
		Bushels	Selling value at kiln	Bushels	Selling value at kiln	Bushels	Selling value at kiln
			\$		\$		\$
Nova Scotia.....	1921	25,914	6,085			25,914	6,085
	1922						
	1923	42,370	7,199			42,370	7,199
New Brunswick.....	1921	562,447	203,084			562,447	203,084
	1922	560,834	187,895			560,834	187,895
	1923	329,548	143,814			329,548	143,814
Quebec.....	1921	1,940,594	754,375	99,857	36,128	2,040,451	790,503
	1922	2,108,513	634,157	150,800	55,642	2,259,313	689,799
	1923	2,198,071	576,731	159,857	57,482	2,357,928	634,213
Ontario.....	1921	2,763,062	962,439	767,485	381,749	3,530,547	1,344,188
	1922	3,939,954	1,311,563	1,040,229	455,980	4,980,183	1,767,543
	1923	4,810,421	1,373,823	1,192,200	519,840	6,002,621	1,893,663
Manitoba.....	1921	413,283	136,375			413,283	136,375
	1922	525,184	163,799			525,184	163,799
	1923	524,128	161,226			524,128	161,226
Alberta.....	1921	107,083	48,332			107,083	48,332
	1922	129,827	70,992	800	336	130,627	71,328
	1923	86,810	37,653	943	346	87,753	37,999
British Columbia.....	1921	152,998	234,779	46,343	17,851	199,341	252,630
	1922	433,716	254,320	83,114	30,321	516,830	284,641
	1923	564,971	338,443	126,000	50,051	690,971	388,494
Canada.....	1921	5,965,381	2,345,469	913,685	435,728	6,879,066	2,781,197
	1922	7,698,028	2,622,726	1,274,943	542,279	8,972,971	3,165,005
	1923	8,556,319	2,638,889	1,479,000	627,719	10,035,319	3,266,608

Table 199.—Imports into Canada and Exports of Lime, 1921, 1922 and 1923

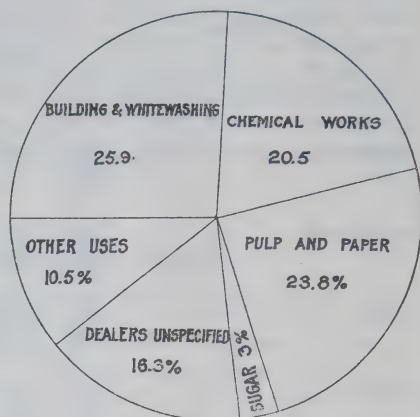
Item	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Imports.....	1,211	19,512	2,555	27,942	4,989	55,820
Exports.....	12,722	247,112	14,330	270,724	24,326	428,286

# PRODUCTION OF LIME IN CANADA 1922

## BY PROVINCES



## BY USES



## SAND AND GRAVEL

The production of sand and gravel in Canada during 1923 totalled 12,752,515 tons, valued at \$3,016,518 as against 11,666,374 tons at \$3,502,935 in the previous year. The increase in quantity was 1,086,141 tons or 9 per cent while the value decreased \$486,417 or 13.9 per cent.

The imports of sand and gravel into Canada during the year were 355,126 tons, an increase of nearly 5,000 tons over those recorded for 1922. Importations of silica sand, for the manufacture of glass and carborundum, and for use in foundries totalled 167,556 tons or 55 per cent more than in the preceding twelve months.

Table 200.—Production of Sand and Gravel in Canada, 1895-1923\*

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	Tons	\$		Tons	\$		Tons	\$
1895.....	277,162	118,359	1905.....	306,935	152,805	1915.....	.....	1,624,767
1896.....	224,769	80,110	1906.....	336,550	139,712	1916.....	8,156,207	1,838,320
1897.....	152,963	76,729	1907.....	298,095	119,853	1917.....	9,182,417	2,326,249
1898.....	165,954	90,498	1908.....	298,954	161,387	1918.....	11,262,282	2,367,018
1899.....	242,450	101,640	1909.....	481,584	256,166	1919.....	10,364,481	2,680,460
1900.....	197,558	101,666	1910.....	624,824	407,974	1920.....	11,530,795	4,201,067
1901.....	197,302	117,465	1911.....	573,494	408,110	1921.....	11,574,862	2,537,249
1902.....	159,793	119,120	1912.....	.....	1,512,099	1922.....	11,666,374	3,502,935
1903.....	355,792	124,006	1913.....	.....	2,258,874	1923.....	12,752,515	3,016,518
1904.....	399,809	189,803	1914.....	.....	2,505,310			
						<b>Total.....</b>		<b>33,136,269</b>

\*Exports prior to 1912. No production statistics collected.

Table 201.—Production in Canada, Imports and Exports of Sand and Gravel, 1921, 1922 and 1923

Kind	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Glass sand.....	135	100			958	171
Moulding sand.....	91,680	70,254	159,369	107,738	154,711	111,537
Building sand and sand for concrete road-work, etc.....	1,755,086	596,980	1,464,112	963,037	1,739,615	706,079
Other sand (including blast, core and engine sands).....	49,915	23,051	165,352	49,916	101,695	72,980
Sand and gravel for railway ballast.....	6,971,874	981,277	6,099,560	1,066,716	6,149,789	800,496
Sand and gravel for concrete, road building, etc.....	2,635,957	802,133	3,591,515	1,198,156	4,115,260	1,050,504
Crushed gravel.....	70,215	63,454	186,466	117,372	490,487	274,751
<b>Total.....</b>	<b>11,574,862</b>	<b>2,537,249</b>	<b>11,666,374</b>	<b>3,502,935</b>	<b>12,752,515</b>	<b>3,016,518</b>
<b>IMPORTS—</b>						
Sand, silica for glass and carborundum manufacture, etc.....	46,455	135,765	107,873	224,473	167,556	317,250
Sand and gravel, n.o.p.....	165,489	114,575	350,992	175,667	355,126	247,388
<b>EXPORTS.....</b>	<b>1,396,728</b>	<b>201,711</b>	<b>683,709</b>	<b>116,121</b>	<b>764,521</b>	<b>182,750</b>

**Production of Railway Companies.**—As the sand and gravel produced by railway companies in Canada accounted for 58 per cent of the total production, statistics relating to this production have been tabulated separately from data regarding other producers. It will be noted in the table below that 80.5 per cent of this output was utilized as railway ballast. In addition to this quantity, 1,414,828 tons was produced for use in the road-building and construction industries, and an appreciable quantity was also consumed as blast, core and engine sands.

Table 202.—Railway Production of Sand and Gravel in Canada, 1921, 1922 and 1923

Kind	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Moulding sand.....	240	780	1,500	300	2,738	405
Building sand and sand for concrete road-work.....	31,911	6,270	24,379	9,468	5,524	2,670
Other sand (including blast, core and engine sand).....	34,829	9,416	20,810	7,732	30,967	38,516
Sand and gravel for ballast.....	6,847,223	938,643	5,938,794	984,317	5,991,863	737,812
Sand and gravel for concrete, road-building, etc.....	782,663	188,816	751,137	128,223	1,409,304	148,535
Crushed gravel.....			635	846	270	500
<b>Total.....</b>	<b>7,696,866</b>	<b>1,143,925</b>	<b>6,737,255</b>	<b>1,130,886</b>	<b>7,440,666</b>	<b>928,433</b>

**Production by Other Operators.**—Statistics given under this sub-heading include data concerning the production of sand and gravel by all operators in Canada other than railway companies. These producers numbered 598, comprising: Nova Scotia, 11; New Brunswick, 5; Quebec, 11; Ontario, 546; Manitoba, 11; Saskatchewan, 6; Alberta, 4; and 4 in British Columbia.

Table 203.—Production of Sand and Gravel by Other Operators in Canada, 1921, 1922 and 1923

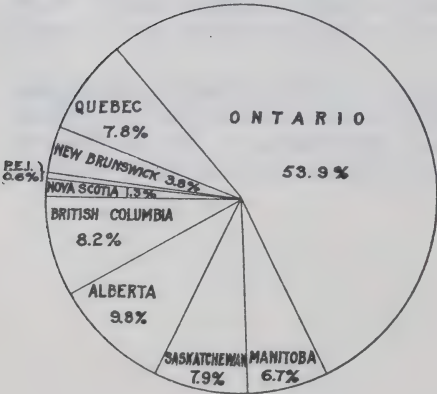
Kind	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Glass sand .....	135	100			958	171
Moulding sand .....	91,440	69,474	157,869	107,438	151,973	111,132
Building sand and sand for concrete road-work, etc. ....	1,723,175	590,710	1,439,733	953,569	1,734,091	703,409
Other sand (including blast, core and engine sands) .....	15,086	13,635	144,542	42,184	70,728	34,464
Sand and gravel for railway ballast .....	124,651	42,634	160,766	82,399	157,926	62,684
Sand and gravel for concrete, road building, etc. ....	1,853,294	613,317	2,840,378	1,069,933	2,705,956	901,969
Crushed gravel .....	70,215	63,454	185,831	116,526	490,217	274,251
Total .....	3,877,996	1,393,324	4,929,119	2,372,049	5,311,849	2,088,080

Table 204.—Production of Sand and Gravel in Canada, by Provinces, 1922

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total for Canada
Moulding sand.....Tons	159		1,975	155,940	1,295				159,369
\$	390		417	106,164	767				107,738
Building sand, etc.....Tons	14,656	70,673	43,209	1,178,098	32,175	4,463	6,176	114,662	1,464,112
\$	8,584	8,315	13,206	844,564	13,019	1,945	3,136	70,268	963,037
Other sand.....Tons	480	560	10,031	108,637	6,767	7,315	1,756	29,806	165,352
\$	236	225	3,038	34,723	3,137	1,564	331	6,662	49,916
Sand and gravel—									
(a) for railway ballast..Tons	105,286	338,393	542,730	2,152,598	360,689	834,393	1,006,538	550,513	*6,099,569
\$	28,775	28,907	51,228	322,062	65,647	286,339	191,662	82,068	*1,066,716
(b) for concrete, etc....Tons	27,263	38,696	307,156	2,576,464	378,837	28,773	16,005	232,899	3,591,515
\$	14,645	12,062	89,051	811,502	124,553	16,885	4,766	124,692	1,198,156
Crushed gravel.....Tons	6,177			113,386	468		19,486	32,371	186,466
\$	2,344			65,159	292		29,196	20,381	117,372
Total.....Tons	154,021	448,322	905,101	6,285,123	780,231	924,944	1,139,961	960,251	11,666,374
\$	54,974	49,509	156,940	2,184,174	207,415	306,733	229,091	304,071	3,502,935

\* Includes 68,420 tons valued at \$10,028 used in Prince Edward Island.

PRODUCTION OF SAND AND GRAVEL IN CANADA 1922  
BY PROVINCES



BY USES

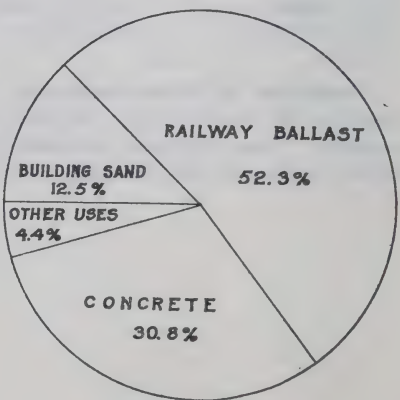


Table 205.—Production of Sand and Gravel in Canada, by Provinces, 1923

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total for Canada
Glass sand.....Tons				958					958
\$				171					171
Moulding sand.....Tons	30			153,652	1,029				154,711
\$	250			110,189	1,098				111,537
Building sand.....Tons	4,787		279,666	1,292,231	37,067	7,287	10,920	107,655	1,739,615
\$	3,490		100,158	513,356	19,035	5,398	7,523	57,119	706,079
Other sand.....Tons	9,476	1,005	10,680	42,415	409	3,652	10,720	23,337	101,695
\$	8,474	28,140	4,336	21,986	290	2,300	2,817	4,637	72,980
Sand and gravel—									
(a) for railway ballast..Tons	162,979	487,844	672,569	3,012,959	440,563	412,283	551,943	388,050	*6,149,789
\$	22,131	49,630	77,390	370,876	51,705	45,606	122,008	56,721	*800,496
(b) for concrete, etc....Tons	25,874	119,679	92,902	3,169,631	115,637	15,097	304,877	271,565	4,115,260
\$	21,083	16,864	24,291	736,499	50,381	6,237	52,165	142,984	1,050,504
Crushed gravel.....Tons	270			474,587	844		9,756	5,030	490,487
\$	500			253,881	969		14,743	4,658	274,751
<b>Total.....Tons</b>	<b>203,416</b>	<b>608,528</b>	<b>1,055,817</b>	<b>8,146,433</b>	<b>595,549</b>	<b>438,319</b>	<b>888,216</b>	<b>795,637</b>	<b>12,752,515</b>
\$	<b>55,928</b>	<b>94,634</b>	<b>206,175</b>	<b>2,006,958</b>	<b>123,478</b>	<b>59,541</b>	<b>199,256</b>	<b>266,119</b>	<b>3,016,518</b>

\* Includes 20,600 tons valued at \$4,429 used in Prince Edward Island.

## SAND-LIME BRICK

A record of the production of sand-lime brick in Canada has been included in all previous reports of mineral production, but owing to the fact that statistics relating to this industry have been treated in detail in the report on *Manufactures of the Non-Metallic Minerals* only a few notes have been included under this section.

The total output of sand-lime brick in 1923 as reported was 60,080 thousand valued at \$897,960 as compared with 52,749 thousand worth \$851,007 in the previous year. The increase in quantity was, therefore, 7,331 thousand, and in value \$46,953.

Ontario was the principal producer; the seven plants operating in this province accounted for practically the entire Canadian output.

Table 206.—Sand-Lime Brick Manufactured in Canada, by Provinces, 1921, 1922 and 1923

Province	1921		1922		1923	
	Quantity	Value	Quantity	Value	Quantity	Value
	M	\$	M	\$	M	\$
Ontario.....	36,482	534,531	48,449	786,772	59,080	887,960
Manitoba.....	6,403	116,926	3,800	57,000	1,000	10,000
Saskatchewan.....	572	11,287	500	7,235		
<b>Total.....</b>	<b>43,457</b>	<b>662,744</b>	<b>52,749</b>	<b>851,007</b>	<b>60,080</b>	<b>897,960</b>

## SLATE

The entire production of Canadian slate comes from deposits situated along the south shore of the St. Lawrence river in the province of Quebec. Mining of slate has been carried on in this province since about 1854, the maximum production, 6,935 tons valued at \$119,160 occurring in the year 1889. In 1923, as in the preceding year, no roofing slate was produced from the quarries in Melbourne Township, Quebec. The total sales for the year, amounting to 1,836 tons valued at \$17,289, consisted of crushed green and red slate, for the manufacture of roofing paper. During 1922, the production amounted to 1,899 tons of crushed slate valued at \$14,871.

Imports of roofing slate decreased 11 per cent from the total for the previous year. Importations of school writing slates and slate pencils also declined, while mantles and all other manufactures advanced 4.6 per cent in value. Customs figures did not show any exports of slate in 1923.

Table 207.—Production in Canada and Imports of Slate, 1921, 1922 and 1923

		1921		1922		1923	
		Quantity	Value	Quantity	Value	Quantity	Value
			\$		\$		\$
<b>PRODUCTION—</b>							
Roofing.....	Squares	415	4,063				
Crushed.....	Tons	2,232	18,262	1,899	14,871	1,836	17,289
<b>IMPORTS—</b>							
Roofing.....	Squares	5,725	74,385	6,640	67,035	5,905	67,507
School-writing.....			93,589		112,885		111,922
Pencils.....			9,462		17,330		9,027
Mantles and manufactures of slate, n.o.p.....			90,163		73,974		77,390
<b>Total.....</b>			<b>267,599</b>		<b>271,224</b>		<b>265,846</b>

## STONE

The production of stone in Canada during 1923 totalled 4,111,334 tons valued at \$5,903,289 as against 3,637,182 tons at \$5,974,993 in 1922. The increase in production amounted to 474,152 tons or 13.4 per cent, while the value declined \$71,704 or 1.2 per cent. Ontario was the leading producer accounting for 64 per cent of the total quantity, and Quebec followed, with 27 per cent. The other provinces in order of tonnage produced were: British Columbia, Nova Scotia, Manitoba and New Brunswick.

The kinds of stone quarried included granite (traprock, syenite and other igneous rock), limestone, sandstone and marble.

The quantity of limestone quarried and used in the manufacture of lime by the operator is not included under this industry; only the quantity and value of lime are recorded in order to avoid duplication of entries.

Table 208.—Production of Limestone and Sandstone in Canada\*, 1909-1923

Year	Limestone	Sandstone	Year	Limestone	Sandstone	Year	Limestone	Sandstone
	\$	\$		\$	\$		\$	\$
1909.....	2,139,691	374,179	1914.....	2,672,781	487,140	1919.....	3,074,815	86,577
1910.....	2,249,576	502,148	1915.....	2,312,081	249,336	1920.....	5,665,693	165,149
1911.....	2,594,926	451,183	1916.....	2,244,091	146,244	1921.....	5,155,046	78,036
1912.....	2,762,936	329,352	1917.....	2,283,659	261,256	1922.....	4,175,941	80,908
1913.....	3,204,091	396,782	1918.....	2,342,403	102,750	1923.....	4,475,921	66,547
						<b>Total.....</b>	<b>47,333,651</b>	<b>3,777,587</b>

\*Data not available prior to 1909.

Table 209.—Production of Granite and Marble in Canada, 1886-1923

Year	Granite	Marble	Year	Granite	Marble	Year	Granite	Marble
	\$	\$		\$	\$		\$	\$
1886.....	63,909	9,900	1899.....	90,542		1912.....	1,373,119	260,764
1887.....	142,506	6,224	1900.....	80,000		1913.....	1,653,791	249,975
1888.....	147,305	3,100	1901.....	155,000		1914.....	2,176,602	132,533
1889.....	79,624	980	1902.....	210,000		1915.....	1,525,553	158,027
1890.....	65,985	10,776	1903.....	200,000		1916.....	1,247,267	118,810
1891.....	70,066	1,752	1904.....	150,000		1917.....	639,412	55,820
1892.....	89,326	3,600	1905.....	226,305		1918.....	590,871	550
1893.....	94,393	5,100	1906.....	278,419		1919.....	850,563	213,982
1894.....	109,936		1907.....	194,712		1920.....	1,503,916	240,593
1895.....	84,838	2,000	1908.....	282,320	125,000	1921.....	1,937,894	172,720
1896.....	106,709	2,405	1909.....	454,824	158,441	1922.....	1,486,250	231,894
1897.....	61,934		1910.....	739,516	188,779	1923.....	1,159,303	201,518
1898.....	81,073		1911.....	1,119,865	162,783	<b>Total.....</b>	<b>20,528,638</b>	<b>2,688,026</b>

Table 210.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1922

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—								
Rough.....Tons	1,380	319	30,981	47,340	1,250		1,700	82,970
\$	7,888	3,624	86,486	58,526	14,960		17,500	188,984
Dressed.....Tons		605	27,931	2,196	2,000	54		32,786
\$		9,494	743,506	19,360	57,623	4,300		834,283
Monumental and Ornamental—								
Rough.....Tons	275	1,121	2,992	217			8,280	12,885
\$	2,664	29,730	86,808	6,198			39,328	164,728
Dressed.....Tons	150	263	11,379	624	200		1,747	14,363
\$	13,200	38,985	112,253	17,076	641		50,507	232,662
Flagstone.....Tons			800	273				1,073
\$			7,948	634				8,582
Curbstone.....Tons		386	5,355	946			200	6,887
\$		4,087	36,230	6,717			3,000	50,034
Paving blocks.....Tons		140	16,512	20,215				36,867
\$		3,036	177,699	222,385				403,120
Limestone, for flux.....Tons	66,892		1,476	32,849			33,204	134,421
\$	51,536		3,958	34,213			37,990	127,697
Limestone for sugar factories, chemical works, etc.....Tons	172		40,712	91,060			2,562	134,506
\$	1,400		51,447	108,550			5,393	166,790
Rubble and riprap.....Tons	5,728		14,807	67,524	11,178	500	36,288	135,025
\$	10,179		13,626	62,179	11,495	3,000	26,934	127,463
Crushed.....Tons	13,358	9,193	834,410	2,054,021	19,728		113,689	3,044,399
\$	32,625	15,774	1,022,355	2,434,088	21,919		143,889	3,670,650
Total.....Tons	87,955	12,027	987,355	2,317,265	34,356	554	197,670	3,637,182
\$	119,492	104,730	2,342,316	2,969,926	106,638	7,300	324,591	5,974,993
Per cent of total.....Quantity	2.5	0.3	27.2	63.7	0.9	0.0	5.4	100.0
Value	2.0	1.8	39.2	59.7	1.8	0.1	5.4	100.0

Table 211.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1923

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	British Columbia	Canada
Building—							
Rough..... Tons	2,108	50	16,923	38,962	2,498	6,872	67,413
\$	17,600	530	106,790	151,499	17,589	47,759	341,767
Dressed..... Tons		450	16,297	1,289	2,000		20,036
\$		14,630	675,682	26,035	43,107		759,454
Monumental and ornamental—							
Rough..... Tons	60	452	5,196	4,151	65		9,924
\$	900	8,074	127,896	14,250	713		151,833
Dressed..... Tons	450	1,100	381	441		960	3,332
\$	20,500	73,014	22,875	14,336		33,800	164,525
Flagstone..... Tons				754			754
\$				5,429			5,429
Curbstone..... Tons		99	3,174	2,167		150	5,590
\$		1,835	22,140	13,978		2,500	40,453
Paving blocks..... Tons		215	14,717	11,851			26,283
\$		24,565	124,625	115,816			265,006
Limestone, for flux..... Tons	117,162		1,298	29,160		10,452	158,072
\$	98,500		1,263	34,800		12,000	146,563
Limestone for sugar factories, chemical works, etc. Tons	1,060	10,034	71,917	106,313		3,259	192,583
\$	4,250	19,481	73,770	112,265		7,284	217,050
Rubble and riprap..... Tons	17,742	200	12,642	65,560	12,863	51,316	160,323
\$	35,220	99	10,859	86,184	15,084	42,907	190,353
Crushed..... Tons	100	9,848	960,331	2,370,776	33,878	92,091	3,467,024
\$	120	23,855	1,166,921	2,284,560	41,784	103,616	3,620,856
Total..... Tons	138,682	22,448	1,102,876	2,630,924	51,304	165,100	4,111,334
\$	177,090	166,063	2,332,821	2,859,152	118,277	249,866	5,903,259
Per cent of total..... Quantity	3.37	0.55	26.83	63.98	1.25	4.02	100.0
Value	3.00	2.81	39.53	48.43	2.00	4.23	100.0

Table 212.—Production of Stone in Canada by Kinds and by Provinces, 1922

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	12,725	44,489	68,122	56,936			7,108	18,067
New Brunswick.....	11,389	95,352					638	9,378
Quebec.....	88,169	665,406	894,311	1,420,223	1,912	231,894	12,963	24,793
Ontario.....	185,738	412,995	2,128,769	2,547,561			2,768	9,370
Manitoba.....			34,356	106,638				
Alberta.....							554	7,300
British Columbia.....	159,904	268,008	36,566	44,583			1,200	12,000
Canada.....	457,925	1,486,250	3,152,124	4,175,941	1,912	231,894	25,221	80,908

Table 213.—Production of Stone in Canada, by Kinds and by Provinces, 1923

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	17,296	54,892	118,222	102,750			3,164	19,448
New Brunswick.....	11,509	143,473	10,689	21,981			250	629
Quebec.....	29,240	436,902	1,057,284	1,671,309	2,473	201,518	13,879	23,092
Ontario.....	188,998	293,454	2,436,453	2,542,320			5,473	23,378
Manitoba.....			51,304	118,277				
British Columbia.....	151,389	230,582	13,711	19,284				
Canada.....	398,432	1,159,303	3,687,663	4,475,921	2,473	201,518	22,766	66,547

Table 214.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1922

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Building—								
Rough.....	1,681	17,351	78,125	124,560	471	25,861	2,693	21,212
Dressed.....	5,479	208,229	25,613	410,281	1,115	203,419	579	12,354
Monumental and ornamental—								
Rough.....	12,821	164,660	64	68				
Dressed.....	14,131	230,987	232	1,675				
Flagstone.....	800	7,948	235	326			38	308
Curbstone.....	941	11,417	5,000	31,900			946	6,717
Paving blocks.....	36,404	398,952					463	4,168
Limestone, for flux.....			134,421	127,697				
Limestone for sugar factories, chemical works, etc.....			134,506	166,790				
Rubble and riprap.....	37,608	27,314	90,415	84,625			8,002	15,524
Crushed.....	348,060	419,392	2,683,513	3,228,019	326	2,614	12,500	20,625
<b>Total.....</b>	<b>457,925</b>	<b>1,486,250</b>	<b>3,152,124</b>	<b>4,175,941</b>	<b>1,912</b>	<b>231,894</b>	<b>25,221</b>	<b>80,908</b>

Table 215.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1923

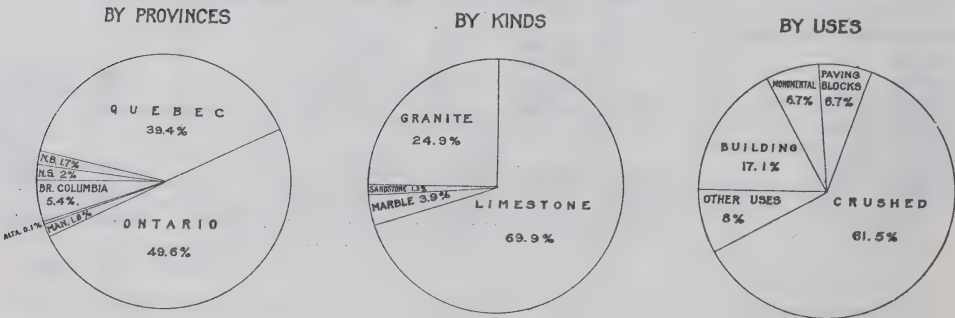
Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Building—								
Rough.....	10,666	92,049	54,430	224,512	159	7,076	2,158	18,130
Dressed.....	4,440	119,437	13,971	451,082	1,625	188,935		
Monumental and ornamental—								
Rough.....	9,796	150,575	128	1,258				
Dressed.....	3,319	164,137	13	388				
Flagstone.....			200	1,000			554	4,429
Curbstone.....	3,411	26,307	12	168			2,167	13,978
Paving blocks.....	24,226	255,568	1,117	671			940	8,767
Limestone, for flux.....			158,072	146,563				
Limestone for sugar factories, chemical works, etc.....			192,583	217,050				
Rubble and riprap.....	68,218	76,393	88,097	107,042			4,008	6,913
Crushed.....	274,356	274,837	3,179,040	3,326,187	689	5,507	12,939	14,325
<b>Total.....</b>	<b>398,432</b>	<b>1,159,303</b>	<b>3,687,663</b>	<b>4,475,921</b>	<b>2,473</b>	<b>201,518</b>	<b>22,766</b>	<b>66,547</b>

Table 216.—Production in Canada, by Kinds and by Provinces, and Imports and Exports of Stone, 1921, 1922 and 1923

	1921		1922		1923	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION, BY KINDS—						
Granite.....	319,398	937,894	457,925	1,486,250	398,432	1,159,303
Limestone.....	3,322,024	5,155,046	3,152,124	4,175,941	3,687,663	4,475,921
Marble.....	1,650	172,720	1,912	231,894	2,473	201,518
Sandstone.....	28,426	78,636	25,221	80,908	22,766	66,547
Total.....	3,671,498	6,343,696	3,637,182	5,974,993	4,111,334	5,903,289
PRODUCTION, BY PROVINCES—						
Nova Scotia.....	58,923	116,602	87,955	119,492	138,682	177,090
New Brunswick.....	15,125	97,290	12,027	104,730	22,448	166,083
Quebec.....	719,499	1,662,641	987,355	2,342,316	1,102,876	2,332,821
Ontario.....	2,716,080	4,167,582	2,317,265	2,969,926	2,630,924	2,859,152
Manitoba.....	16,868	56,666	34,356	106,638	51,304	118,277
Alberta.....	2,962	13,750	554	7,300	.....	.....
British Columbia.....	142,041	229,165	197,670	324,591	165,100	249,866
Canada.....	3,671,498	6,343,696	3,637,182	5,974,993	4,111,334	5,903,289
IMPORTS—						
Building stone.....	.....	297,292	.....	371,490	.....	403,550
Granite.....	.....	71,245	.....	72,633	.....	158,864
Marble.....	.....	429,512	.....	294,206	.....	293,806
Refuse stone.....	236,024	129,645	328,679	199,397	392,819	225,565
Total.....	.....	927,694	.....	937,726	.....	1,081,785
EXPORTS—						
Crushed.....	2,324	8,648	126,063	80,544	89,434	159,088
Ornamental, rough*.....	1,123	13,343	2,666	32,474	3,165	30,350
Building, rough†.....	3,523	8,996	2,357	13,364	1,302	12,575
Dressed.....	.....	26,937	.....	7,870	.....	20,227
Total.....	.....	57,924	.....	134,252	.....	222,240

\*Granite, marble, etc., unwrought.      †Freestone, limestone, etc., unwrought.

PRODUCTION OF STONE IN CANADA IN 1922.



## PART TWO

### GENERAL STATISTICS

Supplementing the statistics reported in Part One, general reviews have been prepared showing for each principal group in the mineral industry of Canada, statistics of capital employed, number of employees, salaries and wages paid, fuel used, and miscellaneous operating expenses incurred. General tables present the principal statistics of the industry as a whole, as well as by groups, and by provinces. There are separate sections each dealing with the general statistics pertaining to a particular industrial group, as the copper-gold-silver industry, nickel-copper industry, asbestos industry, etc. The section on the consumption of mine and mill supplies, contains much information of value to those who specialize in meeting the requirements of the mining industry.

## GENERAL STATISTICS

## INTRODUCTORY REVIEW

In those enterprises which carry on both mining and milling, in the concentrating, amalgamating and cyaniding mills of the gold mining industry, the large reduction works at Cobalt, and such metallurgical operations as the amalgamation of placer gold, it has been found impossible to make a separation of data regarding mining as distinct from metallurgical operations, and the survey which follows covers generally the mining and milling industry. In a later section the smelting and refining industry is described and that section covers those industries which smelt ores either by fire or electrical means.

The principal statistics for the year 1923 are shown under the three main headings Metallics, Non-Metallics, and Structural Materials and Clay Products. In the section on metallics, the net values given to ore shipped by the mines, were in many cases nominal and were made up from book values used by the companies in crediting the mining part of their enterprises. For instance, it was found in the copper-gold-silver section that in some cases the ores shipped from the mines were valued at much lower figures than the metal contents would indicate.

The values of the metallic production given in these tables were reported by the operating companies, and in every case were the settlements received for shipments. The totals therefore indicate more nearly the actual return to the different industries than do the values for the several metals given in part one of this report.

The tables immediately following cover every branch of the three main divisions of the mining industry and show shipments and net returns, capital employed, numbers of employees, salaries and wages, fuel costs, miscellaneous expenses, and power employed throughout the industry.

## VALUE OF PRODUCTS, TOTAL EXPENDITURE AND GROSS PROFITS BY PRINCIPAL MINING INDUSTRIES IN CANADA 1922

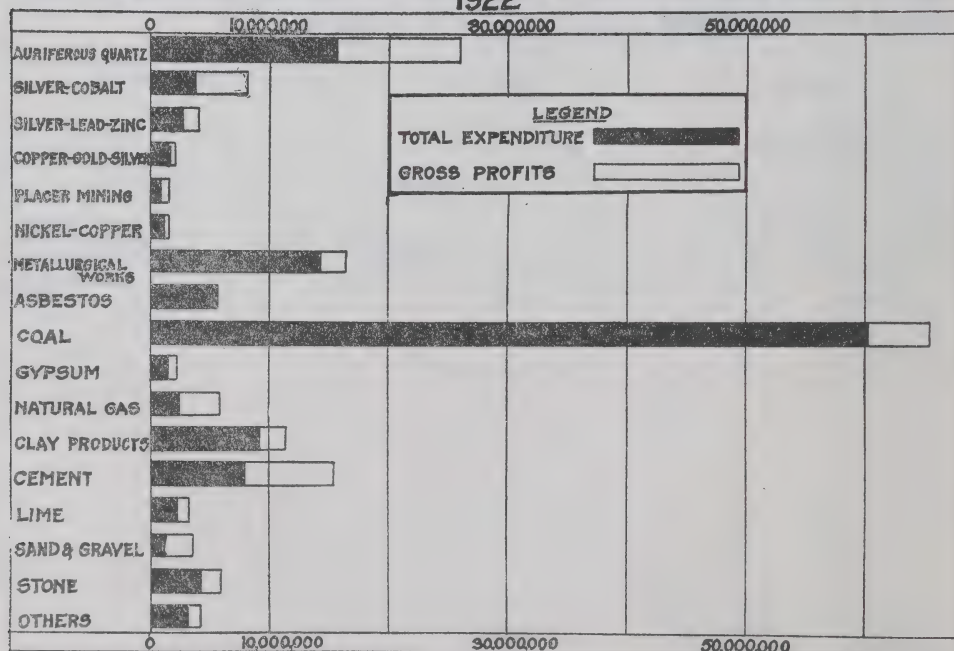


Table 217.—Summary of Principal Statistics Relative to the Mining, Metallurgical, Structural Materials and Clay Products Industries, Operating Plants in Canada, 1923

	Number of active operat- ors	Number of operat- ing plants or mines	Capital employed	Number of em- ployees	Salaries and wages paid	Miscel- laneous expenses	Cost of fuel and electricity	Total expendi- tures	*Net value of bullion, ore, concen- trates or residues shipped from the mines, and smelters
			\$		\$	\$	\$	\$	\$
<b>METALLIC—</b>									
Auriferous quartz min- ing and milling. . .	65	65	77,574,976	5,524	8,961,434	5,661,661	1,497,197	16,120,292	25,021,837
Silver-cobalt mining and milling. . . . .	18	24	31,834,050	1,408	1,049,738	2,132,114	410,089	4,491,941	6,521,853
Silver-lead-zinc min- ing and milling. . . .	87	93	9,203,997	1,352	2,024,752	1,667,932	257,574	3,950,258	6,620,067
Copper-gold-silver mining and milling. .	14	14	19,108,072	1,790	3,004,292	726,613	334,696	4,065,601	4,361,456
Placer mining. . . . .	138	1,467	10,703,650	307	467,807			467,807	1,646,705
Nickel-copper mining and milling. . . . .	3	4	23,168,812	1,081	1,421,086	1,386,605	181,729	2,989,420	3,562,065
Iron mining and briq- uetting <sup>1</sup> . . . . .	6	6	5,504,796	42	34,687	10,026	2,257	46,970	168,904
Iron blast furnaces. . .									294,966
Metallurgical works. .	8	10	64,290,931	4,968	7,930,236	6,472,676	5,221,278	19,624,190	20,414,963
<b>Total. . . . .</b>	<b>339</b>	<b>1,683</b>	<b>249,889,284</b>	<b>16,472</b>	<b>25,794,032</b>	<b>18,057,627</b>	<b>7,904,820</b>	<b>51,756,479</b>	<b>68,612,936</b>
<b>NON-METALLIC—</b>									
Asbestos. . . . .	14	16	42,715,557	3,165	3,607,178	2,524,610	920,826	7,052,614	7,522,506
Coal mining. . . . .	459	507	143,447,448	32,046	46,215,712	19,409,213	4,756,308	70,381,233	72,058,986
Feldspar. . . . .	25	25	948,973	298	193,001	55,542	13,965	262,508	237,601
Grindstones. . . . .	5	5	160,094	62	50,200	19,195	4,892	74,287	80,083
Gypsum. . . . .	15	16	4,249,628	1,225	1,017,556	552,990	190,906	1,761,452	2,243,100
Magnesite. . . . .	3	3	1,887,258	74	107,931	37,832	31,132	176,895	134,382
Mica. . . . .	33	33	223,650	219	112,469	60,216	4,772	177,457	326,974
Natural gas. . . . .	192	2,060	38,722,854	867	1,050,366	1,789,097	2,587	2,842,050	5,884,618
Oxides, iron. . . . .	6	6	209,340	60	49,056	55,318	17,677	122,051	129,636
Petroleum. . . . .	117	2,694	2,934,213	151	118,231	79,019	17,130	214,380	522,018
Quartz. . . . .	11	12	1,044,456	278	284,189	161,881	55,985	502,055	599,250
Salt. . . . .	11	12	2,406,992	368	412,597	404,046	356,794	1,173,437	1,713,516
Talc. . . . .	6	6	679,337	60	59,321	49,239	15,504	124,064	150,507
All other non-metallic	28	29	3,475,427	187	150,457	121,213	33,874	305,544	333,555
<b>Total. . . . .</b>	<b>925</b>	<b>5,424</b>	<b>243,105,227</b>	<b>39,060</b>	<b>53,428,264</b>	<b>25,319,411</b>	<b>6,422,352</b>	<b>85,170,027</b>	<b>91,936,732</b>
<b>STRUCTURAL MATERIALS AND CLAY PRO- DUCTS—</b>									
Clay products. . . . .	219	221	32,294,371	4,730	5,011,700	1,867,898	2,667,115	9,546,713	10,483,016
Cement. . . . .	6	10	38,284,494	1,842	2,551,784	2,947,242	2,809,414	8,308,440	15,064,661
Lime. . . . .	50	56	6,050,954	1,197	1,191,416	806,916	953,709	2,952,041	3,266,608
Sand and gravel. . . .	598	598	4,487,005	891	692,161	270,554	99,409	1,062,124	3,016,518
Stone. . . . .	158	158	13,725,677	2,850	2,665,520	1,130,639	400,517	4,196,676	5,920,578
<b>Total. . . . .</b>	<b>1,031</b>	<b>1,043</b>	<b>94,842,501</b>	<b>11,420</b>	<b>12,112,581</b>	<b>7,023,249</b>	<b>6,930,164</b>	<b>26,065,994</b>	<b>37,751,381</b>
<b>Summary by Classes—</b>									
Metall. . . . .	339	1,683	249,889,284	16,472	25,794,032	18,057,627	7,904,820	51,756,479	68,612,936
Non-Metall. . . . .	925	5,424	243,105,227	39,060	53,428,264	25,319,411	6,422,352	85,170,027	91,936,732
Structural materials and clay products. . .	1,031	1,043	94,842,501	11,420	12,112,581	7,023,249	6,930,164	26,065,994	37,751,381
<b>Total. . . . .</b>	<b>2,295</b>	<b>8,150</b>	<b>578,837,012</b>	<b>66,952</b>	<b>91,334,877</b>	<b>50,400,287</b>	<b>21,257,336</b>	<b>162,992,500</b>	<b>198,301,049</b>

<sup>1</sup> Does not include capital of Granby Consolidated Co., Anyox.

<sup>2</sup> Includes \$420,000 value of placer output for B.C.

<sup>3</sup> Includes 1 chromite producer in Quebec; 1 manganese producer in N.B.; 1 manganese producer in N.S.

<sup>4</sup> Value of pig iron made from domestic ore less net value of same.

<sup>5</sup> Value of shipments from metallurgical works less cost of ores, concentrates, matte, etc. treated as this latter value was included in the credits to the mines and mills.

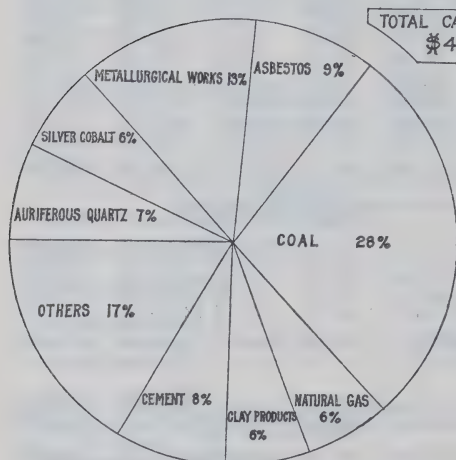
\*Net value here is gross value less freight and treatment charges.

**Table 218.—Summary of Principal Statistics Relative to the Mining, Metallurgical, Structural Materials and Clay Products Industries, Operating Plants in Canada, 1923**

	Number of active operators	Number of operating plants or mines	Capital employed	Number of em- ployees	Salaries and wages paid	Miscell- aneous expenses	Cost of fuel and electricity	Total expendi- tures
			\$		\$	\$	\$	\$
<i>Summary by Provinces—</i>								
Nova Scotia.....	80	113	63,544,560	15,280	17,613,514	9,994,001	2,927,317	30,534,832
New Brunswick.....	44	79	3,300,139	1,334	1,339,229	484,363	154,823	1,978,415
Quebec.....	152	156	79,271,782	7,124	7,446,475	4,523,199	3,031,056	15,000,730
Ontario.....	1,224	5,613	240,899,437	17,978	23,469,827	18,602,250	9,932,155	52,004,232
Manitoba.....	29	30	5,776,757	629	680,133	380,393	328,521	1,389,097
Saskatchewan.....	78	78	4,747,582	738	760,392	222,154	65,274	1,047,820
Alberta.....	391	444	70,843,708	11,295	19,306,818	8,062,502	1,004,017	28,373,427
British Columbia.....	153	163	97,357,573	12,105	19,913,678	7,778,272	3,682,428	31,374,378
Yukon.....	144	1,474	13,095,474	469	804,761	353,063	131,745	1,289,569
<b>Canada.....</b>	<b>2,295</b>	<b>8,150</b>	<b>578,837,012</b>	<b>66,952</b>	<b>91,334,877</b>	<b>50,400,287</b>	<b>21,257,336</b>	<b>162,992,500</b>

**DISTRIBUTION OF CAPITAL EMPLOYED IN THE MINING INDUSTRY IN CANADA  
1922.**

BY INDUSTRIES



BY PROVINCES

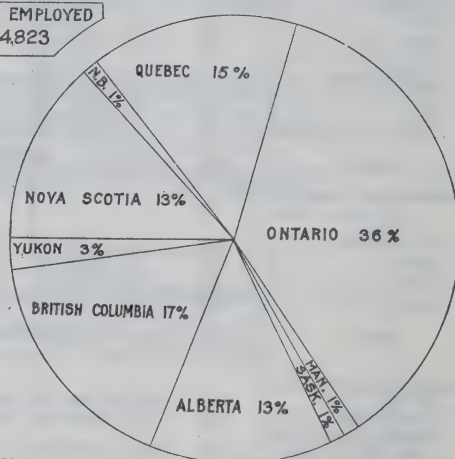


Table 219.—Fuel Used in the Mineral Industry in Canada, by Provinces, 1923

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia and Yukon	Canada
Anthracite Coal.... Tons			10,209	4,877	345		283	1,149	16,863
\$			109,925	49,669	2,746		804	15,182	178,326
Bituminous Coal... Tons	585,542	14,462	277,473	634,843	23,637	3,345	141,208	315,137	1,995,647
\$	2,125,305	76,743	1,806,249	4,478,681	186,268	32,340	598,755	1,289,785	10,594,126
Lignite Coal..... Tons				15	1,437	27,912	165,648		195,012
\$				240	7,542	27,388	90,962		126,132
Coke..... Tons			5,178	187,768	308			27,859	221,113
\$			57,538	2,101,537	5,005			370,630	2,534,710
Gasoline..... Imp. gal.	5,206	2,535	20,939	85,006	326	85	1,176	72,276	187,549
\$	1,605	810	14,432	25,235	130	31	354	55,984	93,581
Fuel oil..... Imp. gal.	25,100	1,035	12,850	4,606,062		5,629	6,000	6,607,689	11,264,365
\$	2,817	198	2,593	437,907		1,007	1,396	211,707	657,625
Wood..... Cord	3,832	8,359	22,721	109,829	16,855	695	2,194	31,388	195,873
\$	17,081	40,788	109,191	612,759	78,050	3,760	8,573	169,770	1,039,972
Artificial and natural gas..... M Cu. ft.	24,000	4,236		515,743			288,200	338,091	1,170,270
\$	1,920	2,779		53,100			10,030		150,345
Other fuels.....	3,200			8,039				4,540	15,779
<b>Total.....</b>	<b>2,151,928</b>	<b>121,318</b>	<b>2,099,928</b>	<b>7,767,167</b>	<b>279,741</b>	<b>64,526</b>	<b>710,874</b>	<b>2,200,114</b>	<b>15,395,596</b>

Table 220.—Fuel Used in the Mineral Industry in Canada, by Kinds and by Industries, 1923

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Total value
	Tons	Tons	Tons	Tons	Gal.	M cu. ft.	Cords	\$	\$
<b>Metallic Mineral Industries—</b>									
Auriferous Quartz Mining and Milling—									
Quantity	1,286	33,197		607	543,100		21,268		
\$	22,317	376,854		10,484	67,689		94,395	3,200	574,939
Copper-Gold-Silver Mining—									
Quantity	230	4,410		25	2,827,617		2,501		
\$	5,290	46,327		420	32,414		12,025		96,476
Nickel-Copper Mining—									
Quantity	46	6,782		93	60,702		254		
\$	742	54,242		1,353	7,240		1,821		65,398
Silver Cobalt Mining and Milling—									
Quantity	522	5,463	15	123	121,207		5,233		
\$	8,493	66,167	240	1,900	19,905		30,777	8,039	135,521
Silver-Lead-Zinc Mining and Milling—									
Quantity	656	4,402		361	136,051		3,639		
\$	5,904	31,230		4,512	56,471		57,192		155,309
*Metallurgical Works—									
Quantity	346	143,960		207,219	7,515,913	302,964	12,828		
\$	5,515	992,664		2,371,949	518,445	81,938	86,886	982	4,058,379
<b>Total..... Quantity</b>	<b>3,086</b>	<b>198,214</b>	<b>15</b>	<b>208,428</b>	<b>11,204,590</b>	<b>302,964</b>	<b>45,723</b>		
<b>\$</b>	<b>48,261</b>	<b>1,567,484</b>	<b>240</b>	<b>2,390,618</b>	<b>792,164</b>	<b>81,938</b>	<b>283,096</b>	<b>12,221</b>	<b>5,086,022</b>

\*Figures for fuel used in chromite and manganese included with metallurgical works.

Table 220.—Fuel Used in the Mineral Industry in Canada, by Kinds and by Industries, 1923—Concluded

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Total value
	Tons	Tons	Tons	Tons	Gals.	M Cu. ft	Cords	\$	\$
<b>NON-METALLIC MINERAL INDUSTRIES—</b>									
Asbestos—	Quantity	9,479	42,912		4,743	2,408	47		
	\$	95,168	292,486		53,719	842	235		442,450
Coal Mining—	Quantity	283	918,404	188,163					
	\$	804	3,302,276	105,885					3,408,965
Feldspar—	Quantity		494				1,804		
	\$		4,282				7,591		11,873
Fluorspar—	Quantity								
	\$								
Grindstones—	Quantity								
	\$								
Gypsum—	Quantity		424		1,115		409		
	\$		3,478		251		1,163		4,892
Iron Oxides—	Quantity		16,787	480	431	21,056	7,527	1,295	
	\$		131,282	2,212	6,590	1,809	4,285	3,821	149,999
Magnesite—	Quantity		650			2,590		1,990	
	\$		6,661			772		10,444	17,277
Mica—	Quantity		3,297					377	
	\$		24,742					754	25,496
Quartz—	Quantity		204			350		669	
	\$		1,666			105		2,932	4,772
Salt—	Quantity		6,397		3	12,537		841	
	\$		49,089		35	2,464		3,777	55,365
Talc—	Quantity		56,928			5,190		443	
	\$		342,966			1,121		2,178	346,265
Miscellaneous Non-Metallic Mineral Industries—	Quantity		156			2,600			
	\$		1,447			823			2,270
<b>Total.....</b>	<b>Quantity</b>	<b>9,776</b>	<b>1,048,469</b>	<b>188,643</b>	<b>48,246</b>	<b>7,527</b>	<b>10,349</b>		
	<b>\$</b>	<b>96,191</b>	<b>4,177,377</b>	<b>108,097</b>	<b>60,344</b>	<b>8,312</b>	<b>42,818</b>		<b>4,497,424</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS INDUSTRIES—</b>									
Cement—	Quantity	12	412,318		15,418	36,544	340		
	\$	346	2,228,542		4,067	1,228	2,549		2,236,732
Clay Products—	Quantity	683	248,307	5,774	1,851	120,967	320,123	63,294	
	\$	4,518	1,957,424	14,961	18,064	17,602	25,028	369,259	2,408,356
Lime Burning—	Quantity	2,336	61,581	38	5,657	4,460	501,112	72,381	
	\$	11,637	461,674	394	65,684	1,323	37,806	327,426	908,052
Sand and Gravel—	Quantity		9,101	542		22,925		20	
	\$		66,708	2,440		5,887		164	75,199
Stone Quarrying—	Quantity	970	17,657		35,308	2,000	3,766		
	\$	17,323	134,917		16,851	60	14,660		183,811
<b>Total.....</b>	<b>Quantity</b>	<b>4,001</b>	<b>748,964</b>	<b>6,354</b>	<b>7,508</b>	<b>199,078</b>	<b>859,779</b>	<b>139,801</b>	
	<b>\$</b>	<b>33,874</b>	<b>4,849,265</b>	<b>17,795</b>	<b>83,748</b>	<b>45,730</b>	<b>64,122</b>	<b>714,058</b>	<b>3,558</b>
<b>Grand Total—</b>	<b>Quantity</b>	<b>16,863</b>	<b>1,995,647</b>	<b>195,012</b>	<b>221,113</b>	<b>11,451,914</b>	<b>1,170,270</b>	<b>195,873</b>	
	<b>\$</b>	<b>178,326</b>	<b>10,594,126</b>	<b>126,132</b>	<b>2,534,710</b>	<b>756,206</b>	<b>150,345</b>	<b>1,039,972</b>	<b>15,395,596</b>

Table 221.—Cost of Electric Power Used in the Mineral Industry in Canada by Industries and by Provinces, 1923

Industry	Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba and Sas- katche- wan	Alberta	British Columbia and Yukon	Canada
	\$	\$	\$	\$	\$	\$	\$
<b>METALLIC—</b>							
Auriferous Quartz.....	3,200		866,756			52,302	922,258
Silver-Cobalt-Nickel.....			274,568				274,568
Silver-Lead-Zinc.....		5,522	6,369			90,374	102,265
Copper Gold.....		22,500				215,720	238,220
Placer Mining.....							
Nickel Copper.....			116,331				116,331
Manganese and Chromite.....		712					712
Metallurgical Works.....			312,912			851,532	1,164,444
<b>Total.....</b>	<b>3,200</b>	<b>28,734</b>	<b>1,576,936</b>			<b>1,209,928</b>	<b>2,818,798</b>
<b>NON-METALLIC—</b>							
Asbestos.....		478,376					478,376
Coal.....	789,872			735	231,161	325,575	1,347,343
Feldspar.....			2,092				2,092
Grindstone.....							
Gypsum.....	8,542		26,639	5,726			40,907
Iron Oxides.....		400					400
Magnesite.....		5,636					5,636
Mica.....							
Quartz.....			620				620
Salt.....			10,529				10,529
Talc.....			13,234				13,234
Natural Gas.....			1,275		1,312		2,587
Petroleum.....			17,130				17,130
Other Non-Metallic.....			6,074				6,074
<b>Total.....</b>	<b>798,414</b>	<b>484,412</b>	<b>77,593</b>	<b>6,461</b>	<b>232,473</b>	<b>325,575</b>	<b>1,924,928</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>							
Cement.....		205,396	209,435	36,639	60,430	60,782	572,682
Clay Products.....	3,902	88,717	152,582	2,428	240	10,890	258,759
Lime.....		16,754	28,216	687			45,657
Sand and Gravel.....		75	18,735			5,400	24,210
Stone.....	3,378	107,040	101,491	3,313		1,484	216,706
<b>Total.....</b>	<b>7,280</b>	<b>417,982</b>	<b>510,459</b>	<b>43,067</b>	<b>60,670</b>	<b>78,556</b>	<b>1,118,014</b>
<b>Grand Total.....</b>	<b>808,894</b>	<b>931,128</b>	<b>2,164,988</b>	<b>49,528</b>	<b>293,143</b>	<b>1,614,059</b>	<b>5,861,740</b>

Table 222.—Machinery Installed and Operated in the Mineral Industry in Canada, 1923

		Boilers installed	Stationary engines, including those used for hoisting, pumping, etc.			Hydraulic turbines or water-wheels	Electric motors	
			Steam	Gas	Oil		Operated by power generated by establishment	Operated by purchased power
<b>METALLIC—</b>								
Auriferous Quartz.....	No. 80	56	8	18	4	59	561	
	H.P. 7,596	3,632	222	1,397	2,360	2,160	31,651	
Silver-Cobalt-Nickel.....	No. 24	17	3				207	
	H.P. 1,743	590	72				7,750	
Silver-Lead-Zinc.....	No. 18	9	10		10	27	60	
	H.P. 1,218	153	575	1,329	1,289	3,443		
Copper-Gold-Silver.....	No. 17	2	1		13	192	90	
	H.P. 3,375	1,055	600		10,550	8,685	3,640	
Placer Gold.....	No. 3	3						
	H.P. 1,500	2,000					154	
Nickel-Copper.....	No. 1	1					8	
	H.P. 50	10					250	
Manganese.....	No. 1							
	H.P. 50							
Iron Blast Furnaces.....	No. 1							
	H.P. 50							
Metallurgical Works.....	No. 45	37			12	671	1,182	
	H.P. 14,085	20,657			12,000	13,000	69,435	
<b>Total.....</b>	<b>No. 170</b>	<b>134</b>	<b>21</b>	<b>28</b>	<b>39</b>	<b>949</b>	<b>2,262</b>	
	<b>H.P. 28,349</b>	<b>29,159</b>	<b>1,047</b>	<b>1,972</b>	<b>26,239</b>	<b>25,134</b>	<b>131,577</b>	
<b>NON-METALLIC—</b>								
Asbestos.....	No. 23	5		2		34	387	
	H.P. 2,400	2,500		21		1,100	28,149	
Coal.....	No. 403	709	34	19	2	721	263	
	H.P. 59,596	127,757	175	111	12,000	37,210	9,591	
Feldspar.....	No. 7	5						
	H.P. 257	265						
Gypsum.....	No. 16	14	5	8		46	55	
	H.P. 1,770	1,410	113	429		729	2,773	
Grindstones.....	No. 6	7		3				
	H.P. 275	255		46				
Magnesite.....	No. 1						24	
	H.P. 1						1,140	
Mica.....	No. 6	2			1	3		
	H.P. 293	47			150	100		
Natural Gas.....	No. 19	14	123	16		12	4	
	H.P. 810	339	1,673	93		98	40	
Petroleum.....	No. 1		24	7			44	
	H.P. 1		176	35			404	
Quartz.....	No. 11	14		4		6	1	
	H.P. 875	772		73		120	200	
Salt.....	No. 26	20		4		2	42	
	H.P. 4,146	510		66		52	496	
Talc.....	No. 2			5			11	
	H.P. 165			47			520	
Other Non-Metallics.....	No. 10	8		6	3	12	27	
	H.P. 1,080	420		98	300	419	482	
<b>Total.....</b>	<b>No. 529</b>	<b>798</b>	<b>186</b>	<b>74</b>	<b>6</b>	<b>836</b>	<b>858</b>	
	<b>H.P. 71,667</b>	<b>134,275</b>	<b>2,137</b>	<b>1,019</b>	<b>12,450</b>	<b>39,828</b>	<b>43,795</b>	
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>								
Cement.....	No. 17	5		15	6	48	892	
	H.P. 2,727	2,772		359	700	2,237	49,435	
Clay Products.....	No. 159	139	23	27	1	33	390	
	H.P. 12,073	9,159	658	449	63	1,207	15,825	
Lime.....	No. 27	22	1	8	3	26	93	
	H.P. 1,076	689	25	98	20	320	2,060	
Sand and Gravel.....	No. 10	48	7	8	5	14	43	
	H.P. 720	2,148	67	133	239	730	1,258	
Stone.....	No. 51	93	6	34	7	30	578	
	H.P. 2,316	3,624	44	561	600	1,220	12,136	
<b>Total.....</b>	<b>No. 264</b>	<b>307</b>	<b>37</b>	<b>92</b>	<b>22</b>	<b>151</b>	<b>1,996</b>	
	<b>H.P. 18,912</b>	<b>18,392</b>	<b>794</b>	<b>1,600</b>	<b>1,622</b>	<b>5,714</b>	<b>80,714</b>	

No power reported under iron mining and briquetting for 1923.

## UNITED STATES TARIFF RATES ON MINERAL PRODUCTS IMPORTED

Since Canadian producers of mineral products market a large part of their annual output in the United States it was thought it might be of value to readers of this report to have at hand a guide to United States Tariff and the following tables were therefore compiled. These have been checked by the United States Trade Commission at Ottawa.

## United States Tariff

Item Number	Material	Duty
<b>(a) On Metals and Manufactures of</b>		
1508	Antimony ore.....	Free
1547	Chromite—Chromite or chrome ore.....	Free
1550	Cobalt metal and ore.....	Free
1562	Cobalt Crystals.....	Free
29	Cobalt linoleate.....	10c. per lb.
29	Cobalt, oxide of.....	20c. per lb.
29	Cobalt salts and compounds (all other).....	30% ad val.
29	Cobalt sulphate.....	10c. per lb.
1457	Cobalt ore waste.....	10% ad val.
1556	Copper ore, regulus of, and black or coarse copper, and cement copper, old copper, fit only for manufacture, copper scale, clippings from new copper, and copper in plates, bars, ingots, or pigs not manufactured or specially provided for.....	Free.
1557	Copper sulphate or blue vitriol, copper acetate and subacetate.....	Free.
381	Copper in rolls, rods or sheets.....	2½ c. per lb.
	Engravers plates, not ground and seamless copper tubes and tubing.....	7 c. per lb.
	Engravers plates ground and brazed copper tubes.....	11c. per lb.
	Brass rods, sheet brass, brass plates, bars, and strips, Muntz yellow metal sheets, metal sheathing, bolts, piston rods and shafting.....	4 c. per lb.
	Seamless brass tubes.....	8c. per lb.
	Brazed brass tubes, angles and channels.....	12c. per lb.
	Bronze rods and sheets.....	4c. per lb.
	Bronze tubes.....	8c. per lb.
1539	Bullion gold or silver.....	Free.
1634	Gold ores and sweepings.....	Free.
1597	Iron ore including manganeseiferous iron ore and residuum from burnt pyrites.....	Free.
1677	Sulphur in any form, and sulphur ore, and spent oxide of iron containing more than 25 per centum of sulphur.....	Free.
392	Lead bearing ore and mattes—duty applied on lead contents, such duty shall not be applied to the lead contained in copper mattes unless actually recovered.....	1½c. per lb.
393	Lead bullion or base bullion, lead in pigs and bars, dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, type metal, Babbitt, solder and all other combinations not specially provided for, duty to apply on lead contents.....	2½c. per lb.
	Lead in sheets, pipe, shot, glaziers lead and lead wire.....	2½c. per lb.
5	Lead, linoleate of.....	25% ad val.
74	Lead litharge.....	2½c. per lb.
302	Manganese ore or concentrates containing in excess of 30 per centum of metallic manganese.....	1c. per lb. on metallic manganese content.
302	Molybdenum ore or concentrates.....	35c. per lb. on metallic molybdenum content.
302	Tungsten ore or concentrates.....	45c. per lb. on metallic tungsten content.
1634	Nickel mattes and ores of nickel.....	Free.
390	Nickel oxide.....	1c. per lb.
390	Nickel and nickel alloys in pigs, ingots shot, cubes and similar forms.....	3c. per lb.
390	Nickel in bars, rods, sheets, strips, tubing, etc.....	25% ad val.
390	In addition thereto on the foregoing if cold rolled, drawn or worked.....	10% ad val.
1596	Platinum, palladium and other metals of the platinum group.....	Free.
394	Zinc-bearing ore of all kinds containing less than 10 per centum of zinc.....	Free.
	Containing more than 10 per centum of zinc and less than 20 per centum.....	1½c. per lb. on metallic zinc contents.
	Containing more than 20 per centum of zinc and less than 25 per centum.....	1c. per lb. on metallic zinc contents.
	Containing 25 per centum of zinc or over.....	1½c. per lb. on metallic zinc contents.
395	Zinc in blocks pigs or slabs and zinc dust.....	1½c. per lb.
395	Zinc in sheets.....	2c. per lb.
395	Zinc scrap for re-manufacturing.....	1½c. per lb.
<b>(b) On Non-Metallic Minerals</b>		
1619	Actinolite—crude, classified as "minerals, crude, not specially provided for".....	Free
214	Actinolite—ground, classified as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
1513	Arsenic—white or arsenious acid.....	Free.
1512	Arsenic—Sulphide of.....	Free.
379	Arsenic—Metallic.....	6c. per lb.
1515	Asbestos—crudes, fibres, sand.....	Free.
1401	Asbestos—yarn.....	30% ad val.
69	Barytes—ore, crude.....	\$4 per ton
69	Barytes—ore, ground.....	\$7.50 per ton.
	Calcite—not mentioned by this name in the tariff. Chalk, crude, is free (Item 1545) and chalk, ground, is dutiable at 25% ad valorem (Item 20).	
1570	Corundum—ore.....	Free

## United States Tariff—Concluded

Item Number	Material	Duty
1415	Corundum—ground.....	1c. per lb.
1619	Feldspar—crude, classified as "minerals, crude not specially provided for".....	Free
214	Feldspar—ground, dutiable as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
207	Fluorspar.....	\$5.60 per ton
213	Graphite or plumbago—crude or refined—Amorphous.....	10% ad val.
213	Graphite or plumbago—crude or refined—Crystalline, lump, chip or dust.....	20% ad val.
213	Graphite or plumbago—crude or refined—Crystalline flake.....	13c. per lb.
236	Grindstones—finished or unfinished.....	\$1.75 per ton
1643	Gypsum—crude.....	Free
205	Gypsum—ground.....	\$1.40 per ton
75	Iron oxides—others, crude.....	1c. per lb.
75	Iron oxides—others, washed or ground.....	1c. per lb.
75	Iron oxides—"iron-oxide pigments not specially provided for".....	20% ad val.
204	Magnesite—crude.....	5/16c. per lb.
204	Magnesite—caustic calcined.....	7c. per lb.
204	Magnesite—dead burned and grain.....	23/40c. per lb.
50	Magnesium sulphate—(Epsom salts).....	1c. per lb.
208	Mica—unmanufactured, valued at not above 15 cents per pound.....	4c. per lb.
208	Mica—unmanufactured, valued above 15 cents per pound.....	25% ad val.
208	Mica—cut or trimmed, and mica splittings.....	30% ad val.
208	Mica—ground.....	20% ad val.
808	Mineral waters.....	10c. per gal.
1640	Phosphate—"phosphates, crude".....	Free
1677	Pyrites—"sulphur ore, such as pyrites or sulphuret of iron in its natural state, and spent oxide of iron, containing more than 25% of sulphur".....	Free
83	Salt—in bags, sacks, barrels, or other packages.....	11c. per cwt.
83	Salt—in bulk.....	7c. per cwt.
83	Sodium sulphate—crystallized or Glauber salt.....	\$1.00 per ton
1667	Sodium sulphate, crude or salt cake.....	Free
207	Silica—crude, not specially provided for.....	\$4 per ton
207	Silica—for use as pigment, not specially provided for.....	\$7.50 per ton
209	Talc—crude.....	1c. per lb.
209	Talc—ground, washed, powdered, or pulverized (except toilet preparations).....	25% ad val.
1675	Tripoli—crude or manufactured, not specially provided for.....	Free
(c) On Structural Materials and Clay Products		
Clay Products—		
201	Brick—bath, chrome and fire, n.s.p.f.....	25% ad val.
1536	Brick—not specially provided for.....	*Free
207	China clay or Kaolin.....	\$2.50 per ton
207	Clays or earths, unwrought or unmanufactured, including common blue clay and Gross-Almerode glass pot clay, n.s.p.f.....	\$1.00 per ton
207	Clays or earths, wrought or manufactured, n.s.p.f.....	\$2.00 per ton
210	Earthenware—common yellow, brown or gray made of natural, unwashed, and unmixed clay, plain or embossed; common salt-glazed stoneware; stoneware and earthenware crucibles; all the foregoing not ornamented, incised, or decorated in any manner.....	15% ad val.
210	Earthenware—ornamented, incised, or decorated in any manner and manufactures wholly or in chief value of such ware, n.s.p.f.....	20% ad val.
207	Earthenware—Rockingham.....	25% ad val.
203	Lime—not specially provided for, including weight of container.....	10c. per cwt.
203	Lime—hydrated, including weight of container.....	12c. per cwt.
237	Slates—slate chimney pieces, mantles, slabs for tables, roofing slates, and all other manufactures of slate, n.s.p.f.....	15% ad val.
Stone—		
203	Limestone—(not suitable for use as monumental or building stone) crude, or crushed but not pulverized.....	5c. per cwt.
235	Limestone, freestone, granite sandstone, lava and all other stone suitable for use as monumental or building stone, except marble, breccia, and onyx, n.s.p.f., hewn, dressed, or polished, or otherwise manufactured.....	50% ad val.
235	Unmanufactured, or not dressed, hewn or polished.....	15c. per cubic ft.
232	Marble, breccia and onyx, in block, rough or squared only.....	65c. per cubic ft.
232	Marble, breccia and onyx, sawed or dressed, over two inches in thickness.....	\$1.00 per cubic ft.
232	Marble, breccia and onyx slabs and paving tiles, containing not less than four superficial inches, if not more than one inch in thickness.....	8c. per superficial foot.
	If more than one inch and not more than one and one-half inches in thickness.....	10c. per superficial foot.
	If more than one and one-half inches and not more than two inches in thickness.....	13c. per superficial foot.
	If rubbed in whole or in part.....	3c. per superficial foot in addition.
	Mosaic cubes of marble, breccia, or onyx, not exceeding two cubic inches in size, if loose.....	One-fourth of one cent per lb. and 20% ad val.
	If attached to paper or other material.....	5c. per superficial foot and 35% ad val.
1675	Stone and sand: Burrstone in blocks, rough or unmanufactured; quartzite; traprock; rottenstone; tripoli and sand, crude or unmanufactured; cliff stone; freestone; granite and sandstone; unmanufactured and not suitable for use as monumental or building stone; all of the foregoing not specially provided for.....	Free

\*Except on imports from countries which impose a duty on similar products imported from U.S. On imports of these commodities a corresponding duty is levied.

## REPORT ON THE CONSUMPTION OF MINE AND MILL MATERIALS BY THE CANADIAN MINERAL INDUSTRY, 1923

### INTRODUCTION

During the past year or two there has been more than the usual enquiry from the industrial sections of Canada for statistics concerning the consumption and use of a wide range of commodities. Many of these data, especially those relating to manufacturing have been compiled in the Dominion Bureau of Statistics, but no complete survey has so far been made dealing with the basic industries. That these industries will interlock more and more closely as they continue to develop is now becoming recognized and in order that future requirements may be approximated, more detailed information concerning actual consumption is essential. The recent development in the mining industry of Ontario is a case in point. With the sinking to deeper levels and the expansion of the different fields, the requirements of squared and round timber for these mines was of importance to those producing forest products, and exact data were requested. In the same way, producers of metals and non-metallic minerals must secure statistics of consumption in other industries to determine outlets for their ever-increasing supply. While new uses are being found for most commodities, the questions, "How much is used?" and "What are future requirements?" will always arise, and correct answers to these questions will have a decided influence on the general prosperity of all industries.

From an economic point of view and also for the purposes of statistical study, it is customary to consider the basic or extractive industries; mining, agriculture, lumbering, fishing and the conversion of water power into electric current, as separate and distinct sections of the industrial life of the country. In a study of these industries comparisons are made of values of materials used, values of products, numbers employed and wages paid, etc., all of which tend to lose sight of or to confuse the intimate relations existing between the industries and manufacturing. There is no better indication of the dependence of one industry upon another than a consideration of the quantities, kinds and values of materials used. A survey covering every item, while entailing an immense amount of labour would strikingly emphasize the inter-relation which exists, showing that, broadly speaking, the depression of the one must in one way or another have its deleterious effect on the other. Many examples might be taken indicative of the importance of a prosperous state of agriculture for instance, and the dependence placed by the business life of the country on this universal industry. This fact is well known throughout the world, but while the mining industry has also a significant influence on all others, the fact has occasionally been overlooked, due to the somewhat restricted nature of the industry geographically, and also because of the smaller numbers employed, smaller aggregate pay-roll and to lack of knowledge of the technique of the industry itself. It must be remembered, however, that Canadian conditions, largely dependent as they are on foreign countries, may not reflect the close and intimate connection existing between the basic industries already apparent in the larger view point of world conditions.

### Dominion Review

In making a survey of materials used by the mines, and in order that the list should not be too cumbersome, it was necessary to restrict it to the most important materials entering into mining and milling costs. In mining, those selected, with the exception of a small amount of timber, were all of a manufactured nature and included powder, drill steel and timber. No data relating to steel rails, track and concrete, etc., were collected. The same procedure was followed in the milling section of the industry and the list comprised the following: steel balls, rods, liners, pebbles, cyanide, lime, zinc, lead acetate, acids, pine oil, coal tar oil, mineral oil and other flotation reagents. The figures given for materials used with the exception of those for powder and timber represent actual consumption in the mining industry very closely. No attempt was made to secure statements from the large number of mining prospectors and others who carried on intermittent work. Powder and timber are widely used in the performance of the statutory assessment work completed by a large number of claim holders in British Columbia, Manitoba, Ontario and Quebec, and as it was impossible to obtain satisfactory data from these

people working mostly in isolated parts, the figures given for these two items refer only to the amounts reported as used in those well-established mines which offer a steady market for the commodities mentioned.

Materials used in placer gold mining and in the pumping of petroleum and natural gas were not included in this survey and no record was obtained from operators of iron blast furnaces and steel rolling mills, the latter group being considered as a division of manufacturing, rather than mining. The data were collected by means of a special questionnaire covering the items above referred to, which was mailed with the annual mineral production schedule to companies operating during 1923. The returns were very complete and covered every enterprise of importance.

The industries circularized and the number of replies received from each have been shown in tabular form. A number of the smaller mines failed to indicate the quantities or values of the materials used, but as it was known from the output records that the consumption of mine and mill material on these properties would, in any event, be negligible, the returns received were considered as reasonably complete. The data given, therefore, may be regarded as providing a fairly comprehensive survey of the consumption of miscellaneous materials in the Canadian mining industry, including not only the raising of ore but the subsequent treatment in mills, smelters and refineries.

The total cost of materials used during 1923 by the Canadian mining industry was \$7,382,526, made up of \$4,352,233 expended by metal mines and smelters, \$2,504,230 by non-metallic mines including coal mines, and \$526,063 by the structural materials and clay products section. The province of Ontario was the largest consumer with a total of \$3,382,064, and was followed by British Columbia with \$1,892,322. The statistics for the other provinces are shown in the table. Of the total cost, the mine materials item was much the largest in point of value and totalled \$5,268,639, or more than 71 per cent of the total. The cost of grinding medium amounted to \$773,388 and chemicals to \$1,340,499 or a total cost for mill materials of \$2,113,887.

In a comparison of these divisions it should be pointed out that only 38 mills and smelting plants were active during the year while in the whole mining industry more than 1,000 concerns great and small reported some consumption of the materials listed.

No tables were compiled to show the cost of materials in the several divisions of each section of the industry, as for instance, for the auriferous quartz mining industry by provinces showing items and costs in each case with a total for Canada, or the same for coal mining, as grand totals in such compilations would be of small use to producers or consumers since the different fields are thousands of miles apart and little would be gained by comparisons of provincial totals of the different sections. By presenting the statistics of quantities and costs by provinces, it was thought that the data would be of greater value to those interested, in that, particular mining areas might be compared with less confusion and in fewer tables. Following the general tables statistics are given for each province in turn commencing with the eastern part of Canada.

Table 223—Number of Operators in the Mineral Industry of Canada by Provinces Who Returned Schedules of Materials Used in 1923

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Canada
<b>METALLIC MINING—</b>										
Copper-Gold.....	-	-	1	-	-	-	-	10	-	11
Gold Ore.....	1	-	-	27	1	-	-	10	1	40
Nickel-Copper.....	-	-	-	2	-	-	-	-	-	2
Silver-Cobalt-Nickel.....	-	-	-	16	-	-	-	-	-	16
Silver-Lead-Zinc.....	-	-	2	1	-	-	-	33	4	40
Smelters—Silver and Silver-Lead-Zinc.....	-	-	-	2	-	-	-	2	-	4
<b>Total Metallics.....</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>48</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>55</b>	<b>5</b>	<b>113</b>
<b>NON-METALLIC MINING—</b>										
Asbestos.....	-	-	7	-	-	-	-	-	-	7
Coal.....	18	8	-	-	-	41	265	15	-	347
Feldspar.....	-	-	4	9	-	-	-	-	-	13
Graphite.....	-	-	1	1	-	-	-	-	-	2
Gypsum.....	4	1	-	2	1	-	-	-	-	8
Magnesite.....	-	-	1	-	-	-	-	-	-	1
Mica.....	-	-	6	2	-	-	-	-	-	8
Quartz.....	1	-	2	1	-	-	-	-	-	4
Talc.....	-	-	-	3	-	-	-	-	-	3
<b>Total Non-Metallics.....</b>	<b>23</b>	<b>9</b>	<b>21</b>	<b>18</b>	<b>1</b>	<b>41</b>	<b>265</b>	<b>15</b>	<b>-</b>	<b>393</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>										
Stone.....	9	6	27	61	1	-	1	7	-	112
Sand and Gravel.....	6	3	4	193	7	1	3	2	-	219
Cement.....	-	-	1	4	2	-	2	1	-	10
Sewer Pipe.....	1	-	1	1	-	-	-	-	-	3
Brick and Tile.....	5	2	7	78	4	5	7	8	-	116
Stoneware and Pottery.....	-	1	1	3	-	-	-	-	-	5
Firebrick and Fireclay Products	1	-	1	1	-	-	-	-	-	3
Lime.....	-	3	10	24	2	-	-	2	-	41
<b>Total Structural Materials and Clay Products.....</b>	<b>22</b>	<b>15</b>	<b>52</b>	<b>365</b>	<b>16</b>	<b>6</b>	<b>13</b>	<b>20</b>	<b>-</b>	<b>509</b>
<b>Grand Total.....</b>	<b>46</b>	<b>24</b>	<b>76</b>	<b>431</b>	<b>18</b>	<b>47</b>	<b>278</b>	<b>90</b>	<b>5</b>	<b>1,015</b>

Table 224—Mine and Mill Materials Used in the Mining Industry in Canada, by Provinces, 1923

Material	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada*
<b>MINE MATERIALS</b>									
Powder..... Lb.	1,182,681	56,040	992,962	8,601,392	43,860	172,948	994,311	3,594,498	15,703,592
\$	240,270	13,356	186,032	1,543,970	11,343	27,073	199,215	649,523	2,893,492
Drill Steel..... Lb.	120,718	3,055	54,257	2,012,103	-	700	14,031	632,627	2,837,701
\$	11,865	579	10,199	125,283	-	35	3,471	97,342	248,850
Mine Timber, M ft. B.M.	3,587	1,813	293	3,314	-	66	3,912	5,761	18,775
\$	69,874	35,883	9,463	106,556	-	1,019	108,345	176,435	510,630
M Lineal Ft.	26,655	1,781	25	3,020	-	114	14,513	16,033	62,147
\$	492,300	41,937	808	172,874	-	3,335	462,185	382,634	1,557,048
Cords	1,051	217	-	719	-	7	1,745	5,300	9,213
\$	6,952	3,026	-	1,983	-	74	11,268	31,536	58,619
<b>Total..... \$</b>	<b>821,261</b>	<b>94,781</b>	<b>206,502</b>	<b>1,950,666</b>	<b>11,343</b>	<b>31,536</b>	<b>784,484</b>	<b>1,337,470</b>	<b>5,268,639</b>
<b>MILL MATERIALS</b>									
<i>Grinding Supplies</i>									
Steel Balls..... Lb.	-	-	789,411	3,128,303	77,387	-	2,104	2,117,945	6,115,150
\$	-	-	32,689	149,154	4,431	-	52	111,985	298,311
Steel Rods..... Lb.	-	-	-	979,754	-	-	-	80,875	1,060,629
\$	-	-	-	51,511	-	-	-	3,997	55,508
Steel Liners..... Lb.	-	-	213,723	1,503,067	57,053	-	-	571,888	2,345,731
\$	-	-	60,427	111,231	10,323	-	-	61,139	243,120

\*Total for Canada includes the following data for the Yukon:— Powder, 64,900 lb. value \$22,710. Drill steel, 210 lb. value \$76. Mine timber, 29 M ft. B.M. value \$3,055. Mine timber, 6 M lineal ft. value \$975. Mine timber, 174 cords, value \$3,780.

Table 224—Mine and Mill Materials Used in the Mining Industry in Canada, by Provinces, 1923—Continued

Material	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
MILL MATERIALS—Con									
Grinding Supplies—Con									
Rubber Liners..... No.	-	-	-	3	-	-	-	-	3
	-	-	-	882	-	-	-	-	882
Pebbles..... Lb.	-	-	2,000	8,761,005	96,000	-	285,300	2,209,200	11,353,505
\$	-	-	25	88,676	857	-	4,143	20,754	114,455
Other Grinding Supplies..... Lb.	-	-	60,000	1,267,760	201,800	-	86,000	1,046,000	2,661,560
\$	-	-	5,200	26,761	2,260	-	999	25,902	61,112
Total..... \$	-	-	98,341	428,205	17,871	-	5,194	223,777	773,358
Miscellaneous, Mostly Chemicals									
Aluminum..... Lb.	-	-	-	29,369	-	-	-	-	29,369
\$	-	-	-	10,823	-	-	-	-	10,823
Bleaching Powder. Lb.	-	-	-	385,342	-	-	-	-	385,342
\$	-	-	-	8,408	-	-	-	-	8,408
Boric Acid Crystals Lb.	-	-	-	28,152	-	-	-	-	28,152
\$	-	-	-	3,138	-	-	-	-	3,138
Carborundum..... \$	-	-	4,387	-	-	-	-	-	4,387
Caustic Soda..... Lb.	-	-	-	9,112,976	-	-	-	-	9,112,976
\$	-	-	-	75,029	-	-	-	-	75,029
Chloride of Lime.. Lb.	-	-	-	50,464	-	-	-	-	50,464
\$	-	-	-	1,890	-	-	-	-	1,890
Coal Tar Oils..... Gal.	-	40	355	23,122	-	-	-	258,845	282,362
\$	-	7	159	8,509	-	-	-	40,167	48,842
Copper Sulphate... Lb.	-	-	-	-	-	-	-	502,870	502,870
\$	-	-	-	-	-	-	-	37,769	37,769
Cyanide..... Lb.	-	-	-	2,286,299	-	-	-	268,660	2,554,959
\$	-	-	-	468,668	-	-	-	59,345	528,013
Gypsum..... Lb.	-	-	-	10,382,000	-	-	-	-	10,382,000
\$	-	-	-	25,267	-	-	-	-	25,267
Hydrofluosilicic Acid Lb.	-	-	-	-	-	-	-	199,760	199,760
\$	-	-	-	-	-	-	-	40,829	40,829
Lead Acetate..... Lb.	-	-	-	29,705	-	-	-	2,544	32,249
\$	-	-	-	4,121	-	-	-	489	4,610
Lime..... Lb.	-	-	30,000	10,595,334	-	-	-	1,317,283	11,942,617
\$	-	-	140	80,271	-	-	-	13,572	93,983
Liquid Chlorine... Lb.	-	-	-	1,278,512	-	-	-	-	1,278,512
\$	-	-	-	68,926	-	-	-	-	68,926
Mercury..... Lb.	-	-	-	-	-	-	-	10	10
\$	-	-	-	-	-	-	-	15	15
Mineral Oils..... Gal.	60	-	702	8,406	-	-	-	150,665	159,833
\$	27	-	298	4,033	-	-	-	8,217	12,575
Muriatic Acid..... Lb.	-	-	-	416,352	-	-	-	1,930	418,282
\$	-	-	-	13,396	-	-	-	179	13,575
Nitrate of Soda.... Lb.	-	-	-	-	-	-	-	52,395	52,395
\$	-	-	-	-	-	-	-	2,274	2,274
Nitric Acid..... Lb.	-	-	-	1,128	-	-	-	-	1,128
\$	-	-	-	101	-	-	-	-	101
Oleic Acid..... Lb.	-	-	-	-	-	-	-	12,400	12,400
\$	-	-	-	-	-	-	-	2,403	2,403
Oxalic Acid..... Lb.	-	-	1,272	-	-	-	-	-	1,272
\$	-	-	171	-	-	-	-	-	171
Pine Oils..... Gal.	-	-	255	10,477	-	-	-	27,538	38,270
\$	-	-	227	8,358	-	-	-	23,253	31,838
Soda Ash..... Lb.	-	-	-	2,760,813	-	-	-	2,034,068	4,794,881
\$	-	-	-	60,972	-	-	-	54,259	115,231

Table 224—Mine and Mill Materials Used in the Mining Industry in Canada, by Provinces, 1923—Concluded

Material	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
<i>Miscellaneous, Mostly Chemicals</i>									
Sodium Silicate.... Lb.	-	-	-	9,265	-	-	-	-	9,265
\$	-	-	-	362	-	-	-	-	362
Sodium Sulphide.... Lb.	-	-	-	345,415	-	-	-	6,850	352,265
\$	-	-	-	15,866	-	-	-	341	16,207
Sulphur..... Lb.	-	-	-	-	-	-	-	161,000	161,000
\$	-	-	-	-	-	-	-	3,188	3,188
Sulphuric Acid.... Lb.	-	-	-	10,996,608	-	-	-	3,277,881	14,274,489
\$	-	-	-	110,553	-	-	-	39,962	150,515
Zinc..... Lb.	-	-	-	265,644	-	-	-	26,170	291,814
\$	-	-	-	32,493	-	-	-	3,380	35,873
Not specified..... \$	-	180	565	2,009	-	-	70	1,433	4,257
Total..... \$	27	187	5,947	1,003,193	-	-	70	331,075	1,340,499
<b>Grand Total \$</b>	<b>821,288</b>	<b>94,968</b>	<b>310,790</b>	<b>3,382,064</b>	<b>29,214</b>	<b>31,536</b>	<b>789,748</b>	<b>1,892,322</b>	<b>7,382,526</b>

## Nova Scotia

The total cost of materials used in the mineral industry in Nova Scotia during 1923 was \$821,288 of which the major portion was paid out by the non-metallic section. There were 56 coal mines in operation during the year and with the exception of 9 important gypsum deposits, no other non-metallic mining was reported. The stone quarries were important users of the materials listed. The total consumption of powder reported was 1,182,681 pounds costing \$240,270; drill steel amounted to 120,718 pounds with a cost of \$11,865. The consumption of timber was larger in the 56 Nova Scotia coal mines than in the total 356 mines in Alberta and in all was as follows: prepared timber, 3,587 M feet board measure valued at \$69,874; round timber, 26,655 M. lineal feet costing \$492,300; lagging and pit-props, 1,051 cords, valued at \$6,952. With the exception of about 10 cords, all this material was used in coal mining. Only about 1,200 pounds of powder and some 550 pounds of drill steel were reported as consumed in the other sections of non-metallic mining. There was a considerable revival in metal mining in this province during the year and interest was renewed in the well-known gold deposits of Guysboro and Halifax counties. Considerable investigational work was carried on and there was also some isolated prospecting by individuals regarding which no data were obtainable.

Table 225—Mine and Mill Materials Used in Nova Scotia, 1923

Material	Unit	Quantity	Value
<b>MINE MATERIALS—</b>			\$
Powder.....	Lb.	1,182,681	240,270
Drill Steel.....	"	120,718	11,865
Timber.....	M ft. B.M.	3,587	69,874
	M ft. Lineal	26,655	492,300
	Cords	1,051	6,952
<b>MILL MATERIALS—</b>			
Mineral oils.....	Gal.	60	27
<b>Total.....</b>			<b>821,288</b>

## New Brunswick

The province of New Brunswick, which is situated on the Atlantic seaboard, contiguous to Nova Scotia and directly west of it, resembles the latter in the quality and kind of its mineral deposits now being operated. With the exception of the deposits of metallic ores, which have not as yet been developed, the avenues of consumption for the materials under review lie in the coal mines, gypsum and stone quarries. During 1923, reports were received from 17 coal mines, 2 gypsum quarries and 7 stone quarries. While the coal mines used powder, steel and timber, the gypsum and stone quarries, being open-cut operations, did not report the use of timber. The total cost in 1923 of the listed materials amounted to \$94,968, all of which, with the exception of \$187 expended for oils, was used by the above-mentioned industries. There were included: powder, 56,040 pounds costing \$13,356; drill steel, 3,055 pounds valued at \$579; prepared timber, 1,813 M feet board measure costing \$35,883; round timber, 1,781 lineal feet at \$41,937 and 217 cords of pit-props or lagging valued at \$3,026. Of this material about 10,325 pounds of powder valued at \$2,456, and about 1,000 M lineal feet of timber was used by the quarries.

Table 226—Mine and Mill Materials Used in New Brunswick, 1923

Material	Unit	Quantity	Value
			\$
<b>MINE MATERIALS—</b>			
Powder.....	Lb.	56,040	13,356
Drill Steel.....	"	3,055	579
Mine Timber.....	M. ft. B.M.	1,813	35,883
	M. lineal ft.	1,781	41,937
	Cords	217	3,026
<b>MILL MATERIALS—</b>			
Oils.....	Gal.	313	187
<b>Total.....</b>			<b>94,968</b>

## Prince Edward Island

No mining except the production of some structural material and clay products is carried on in Prince Edward Island and therefore, no consumption of materials was reported.

## Quebec

With the favourable development of the new gold fields in the north, the province of Quebec may possibly become a much larger consumer of mine materials than the tables given herein would indicate. Asbestos mining is of the most importance in this province and is carried on in the eastern townships. This industry, therefore, offers the principal markets for mine and mill materials and bears much the same relation to the other divisions of mining in Quebec as coal mining does in the provinces of Nova Scotia and New Brunswick. Besides asbestos mining, properties were operated producing feldspar, quartz, magnesite, graphite, mica and stone, all of which used some, at least, of the materials under review. The copper and lead-zinc properties have not been so active lately as heretofore and during 1923 these operators expended only \$9,463 for materials. The asbestos, feldspar, quartz, magnesite, chromite and graphite mines used \$163,911 worth of the total materials consumed, while structural materials and clay products industries used \$137,416 worth.

Table 227—Mine and Mill Materials Used in Quebec, 1923

Material	Copper and lead-zinc		Asbestos		Feldspar, chromite, magnesite, quartz, graphite and mica		Structural materials and clay products		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$		\$		\$
<b>MINE MATERIALS—</b>										
Powder..... Lb.	25,600	5,039	605,379	107,560	32,623	7,377	329,355	66,056	992,962	186,032
Drill Steel..... Lb.	2,203	366	32,200	4,882	6,458	1,084	13,396	3,867	54,257	10,199
Mine Timber..... M Ft.B.M	3	90	290	9,373	—	—	—	—	293	9,463
M Lineal Ft.	—	—	25	808	—	—	—	—	25	898
Total.....	—	5,495	—	122,623	—	8,461	—	69,923	—	296,502
<b>MILL MATERIALS—</b>										
<i>Grinding Supplies—</i>										
Steel Balls..... Lb.	44,000	3,000	—	—	7,000	321	738,411	29,368	789,411	32,659
Steel Liners..... "	—	—	4,698	27,203	—	—	209,025	33,224	213,723	60,427
Pebbles..... "	—	—	—	—	2,000	25	—	—	2,000	25
Other Grinding Medium "	—	—	60,000	5,200	—	—	—	—	60,000	5,200
Total.....	—	3,000	—	32,403	—	346	—	62,592	—	98,341
<i>Miscellaneous, Mostly Chemicals</i>										
Carborundum..... Lb.	—	—	—	—	—	—	—	4,387	—	4,387
Coal Tar Oils..... Gal.	300	143	—	—	55	16	—	—	355	159
Lime..... Lb.	30,000	140	—	—	—	—	—	—	30,000	140
Mineral Oils..... Gal.	—	—	—	—	120	20	582	278	702	298
Oxalic Acid..... Lb.	—	—	—	—	—	—	1,272	171	1,272	171
Pine Oils..... Gal.	200	185	—	—	55	42	—	—	255	227
Other.....	—	500	—	—	—	—	—	65	—	565
Total.....	—	968	—	—	—	78	—	4,901	—	5,947
<b>Grand Total.....</b>	—	9,463	—	155,026	—	8,885	—	137,416	—	310,790

## Ontario

The greatest market for mining and milling materials of all kinds available in Canada is to be found in the province of Ontario, where developments in metal mining and metallurgy have gone forward very rapidly during the past two decades. While the non-metallic section and structural materials and clay products group were not important consumers of the materials listed, they together expended on these materials more than a quarter of a million dollars during the year. The most important section of the industry is gold mining, centered around Porcupine and Kirkland Lake in the northern part of the province. Here, some 27 active mines used almost two million dollars' worth of materials which comprised 5,257,412 pounds of powder costing \$953,923; drill steel, 850,263 pounds costing \$74,336; and timber, \$223,190; milling supplies such as balls, rods, liners and pebbles, etc., \$298,887; and chemicals, \$360,228. Compared with these figures, the needs of the silver-cobalt mines, located about 100 miles south of Porcupine, and of which 14 carried on continuous operations during 1923, were not nearly so great; the total cost of materials used was slightly over half a million dollars. Including returns from one lead mine at Galetta, the quantities reported were 982,400 pounds of powder costing \$186,015; drill steel, 203,440 pounds costing \$24,030; timber, \$22,916; milling materials totalled \$54,665 and chemicals amounted to \$265,343 in cost. Comparisons may be made with the nickel-copper industry from the data given in the table. Only two nickel companies reported in the mine section. The figures covering smelting and refining, refer to all the companies operating during 1923. The consumption of chemicals was important in the non-ferrous metal smelting plants and amounted in value to \$310,701.

In the total for Ontario which amounted to \$3,382,064, materials used directly for underground work cost \$1,950,666, while chemicals cost roughly half as much as mine supplies and amounted to \$1,003,193. Milling requirements totalled \$428,205 for all sections of the industry. Gold milling, with the larger plants and larger tonnages treated, accounted for 69 per cent of the total or \$298,887. Silver-cobalt and lead milling materials cost \$54,665 or 12 per cent of the total. The nickel-copper mill returns were small as only three companies were operating and the major portion of the ore treated was used directly without any fine crushing or concentrating.



Table 228—Mine and Mill Materials Used in the Mining Industry in Ontario by Industries, 1923—Concluded

Material		Gold mining	Silver-cobalt and lead mining	Nickel mining, smelting and refining	Non-Ferrous metal smelters	Non-Metallic mining	Structural materials and clay products	Total
<i>Miscellaneous, Mostly Chemicals—Con.</i>								
Pine Oils.....	Gal.	160	7,825	1,492	-	1,000	-	10,477
	\$	185	5,717	1,676	-	780	-	8,358
Soda Ash.....	Lb.	-	55,200	-	2,705,613	-	-	2,760,813
	\$	-	1,410	-	59,562	-	-	60,972
Sodium Silicate.....	Gal.	-	9,265	-	-	-	-	9,265
	\$	-	362	-	-	-	-	362
Sodium Sulphide.....	Lb.	-	345,415	-	-	-	-	345,415
	\$	-	15,866	-	-	-	-	15,866
Sulphuric Acid.....	Lb.	36,493	284,742	3,156,080	7,519,293	-	-	10,996,608
	\$	1,089	6,747	27,018	75,699	-	-	110,553
Zinc.....	Lb.	265,644	-	-	-	-	-	265,644
	\$	32,493	-	-	-	-	-	32,493
Unspecified.....	\$	-	-	-	2,009	-	-	2,009
Total.....	\$	360,228	265,343	37,248	309,948	1,480	28,946	1,003,193
Grand Total.....	\$	1,910,564	552,969	284,424	310,701	33,839	289,567	3,382,064

## Manitoba

The mining industry in the province of Manitoba used less mining and milling material<sup>1</sup> than any other province except Yukon Territory. The continued depression in metal mining was in a large degree responsible, but there are now developments in the northern copper and gold fields which are encouraging. While considerable work was completed in the metalliferous mines of The Pas country, the operations were not continuous and no data were available covering this portion of the province. The total cost of material for Manitoba was given as \$29,214, almost all of which was used in the production of structural materials and clay products. The non-metallic mines group reported paying \$1,885 for 7,000 pounds of powder, all used in the gypsum quarries. The production of lime, cement and stone accounted for the balance of the \$29,214 expended, the itemized details of which may be seen in the subjoined table.

Table 229—Mine and Mill Materials used in Manitoba, 1923

Material	Non-Metallic mining		Structural materials and clay products		Total	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
MINE MATERIALS—						
Powder..... Lb.	7,000	1,885	36,860	9,458	43,860	11,343
MILL MATERIALS—						
Steel balls..... “	—	—	77,387	4,431	77,387	4,431
Steel liners..... “	—	—	57,053	10,323	57,053	10,323
Pebbles..... “	—	—	96,000	857	96,000	857
Other.....	—	—	—	2,260	—	2,260
Total.....	—	1,885	—	27,329	—	29,214

## Saskatchewan

The development of the mining industry has been so rapid throughout the other provinces of Canada and has attracted so much attention that the progress made in this industry in the prairie provinces is sometimes overlooked, the more so because Saskatchewan is principally thought of as a wheat-producing province. There has, as yet, been no development of metal

deposits paralleling Manitoba's record, but many of the deposits of lignite coal have been opened up and appreciable tonnages are annually produced. The cost of the materials used in mining in Saskatchewan was greater than in Manitoba and totalled \$31,536, all of which was used in the mining section, no milling having been reported. Of this total, \$30,380 worth was used in lignite mining and the balance in the production of structural materials and clay products.

Table 230—Mine Materials Used in Saskatchewan, 1923

Material	Unit	Lignite coal, structural materials, and clay products	
		Quantity	Value
<b>MINE MATERIALS—</b>			\$
Powder.....	Lb.	172,948	27,073
Drill steel.....	"	700	35
Mine timber.....	M Ft. B.M.	66	1,019
	M lineal feet	114	3,335
	Cords	7	74
<b>Total.....</b>			<b>31,536</b>

## Alberta

The province of Alberta stood fourth among the provinces of the Dominion as a market for the materials most commonly used in mining; the total amount expended during 1923 was in excess of three-quarters of a million dollars of which sum the operating coal mines accounted for all but \$8,840 which was reported as spent principally in the preparation of cement. The production of coal necessitates the use of large quantities of timber for props and lagging and in 1923 a total of \$581,798 was expended by 265 mines in Alberta on this account as compared with \$568,860 for 56 operating mines in Nova Scotia. In spite of the great difference in the number of mines operated in these two provinces, the total cost of timbering was about the same per ton of coal output. In Nova Scotia the 1923 output was 6,597,838 tons and the cost of timber used was 8.60 cents per tons of coal mined; Alberta produced 6,854,397 tons of coal at a timber cost of 8.47 cents per ton of coal output. Examination of the tables, however, shows that in Alberta, the quantity of pit props and lagging used was much less than in the eastern province; the reported cost on the other hand was appreciably higher. Less drill steel was used in Alberta than in Nova Scotia; the figures were 14,031 pounds costing \$3,471 as against 120,718 pounds costing \$11,865 in Nova Scotia. In cement making, stone quarrying, and the manufacture of clay products, small expenditures for grinding materials, etc., were reported.

Table 231—Mine and Mill Materials Used in Alberta, 1923

Material	Unit	Coal mining		Structural materials and clay products		Total	
		Quantity	Value	Quantity	Value	Quantity	Value
<b>MINE MATERIALS—</b>			\$		\$		\$
Powder.....	Lb.	979,162	195,771	15,149	3,444	994,311	192,215
Drill steel.....	"	13,774	3,339	257	132	14,031	3,471
Mine timber.....	M Ft. B.M.	3,912	108,345	-	-	3,912	108,345
	M lineal ft.	14,513	462,185	-	-	14,513	462,185
	Cords	1,745	11,268	-	-	1,745	11,268
<b>Total.....</b>		-	780,908	-	3,576	-	784,484
<b>MILL MATERIALS—</b>							
Steel balls.....	Lb.	-	-	2,104	52	2,104	52
Pebbles.....	"	-	-	285,300	4,143	285,300	4,143
Other.....		-	-	-	1,069	-	1,069
<b>Total.....</b>		-	-	-	5,264	-	5,264
<b>Grand Total.....</b>		-	780,908	-	8,840	-	789,748

## British Columbia

The value of the materials used in mining and milling in British Columbia during 1923 was the second largest of any of the provinces and amounted to \$1,892,322 or a little more than half as much as was spent in the purchase of similar materials for use in Ontario mines. Both the metallic and non-metallic sections of the industry were carried on in a large way during the year with correspondingly large costs of materials, but the similar expenditures incurred in the production of structural materials and clay products were not so great as in the other provinces. Metal mining, milling and non-ferrous smelting accounted for \$1,253,425 or 67 per cent of the total, while similar materials used in the non-metallic section including coal, cost less than 50 per cent as much or \$589,544 and in the structural materials section, the miscellaneous materials purchased amounted to only 2.5 per cent of the total or \$49,353. As indicated in the tables, the copper-gold mining and milling section which included the Granby smelter, was of the greatest importance, and materials used amounted to \$637,781. The silver-lead-zinc industry was next in order with a total of \$200,555. Gold quartz mining accounted for \$201,777, while a large and important list of chemicals costing \$170,868 was used at Trail. In the whole industry in British Columbia, explosives used amounted to 3,594,498 pounds costing \$649,523; drill steel amounting to 632,627 pounds cost \$97,342, and the timber used was valued at \$590,605, making a total of \$1,337,470 for mine materials. Grinding supplies totalled \$223,777 in cost, of which \$111,985 was spent for steel balls. Chemicals amounted to \$331,075, the largest single items of which were 268,660 pounds of cyanide costing \$59,345 followed by 2,034,068 pounds of soda ash worth \$54,259 and 199,760 pounds of hydrofluosilicic acid costing \$40,829.

Table 232—Mine and Mill Materials Used in the Mining Industry in British Columbia by Industries, 1923

		Copper-gold mining	Silver-lead-zinc mining	Gold quartz mining	Smelting	Non-Metallic mining	Structural materials	Total
<b>MINE MATERIALS—</b>								
Powder.....	Lb.	2,025,825	475,670	475,346	—	516,062	101,595	3,594,498
	\$	351,347	95,937	93,648	—	89,128	19,463	649,523
Drill Steel.....	Lb.	517,782	9,843	93,107	—	5,754	6,141	632,627
	\$	81,207	1,300	13,249	—	817	769	97,342
Mine Timber.....	M Ft. B.M.	3,193	138	341	—	2,089	—	5,761
	\$	57,981	4,090	10,890	—	103,474	—	176,435
	M Lineal Ft.	1	156	9	—	15,867	—	16,033
	\$	19	9,835	490	—	372,290	—	382,634
	Cords	1,100	256	20	—	3,924	—	5,300
	\$	6,000	1,601	100	—	23,335	—	31,536
Total .....	\$	496,554	112,763	118,377	—	589,544	20,232	1,337,470
<b>MILL MATERIALS—</b>								
<i>Grinding Supplies—</i>								
Steel Balls.....	Lb.	656,000	378,583	248,862	597,556	—	236,944	2,117,945
	\$	35,451	21,149	15,245	28,501	—	11,639	111,985
Steel Rods.....	Lb.	23,000	—	—	57,875	—	—	80,875
	\$	1,067	—	—	2,930	—	—	3,997
Steel Liners.....	Lb.	193,681	83,697	39,300	63,645	—	191,565	571,888
	\$	21,029	7,595	8,018	11,088	—	13,409	61,139
Pebbles.....	Lb.	1,951,200	—	—	—	—	258,000	2,209,209
	\$	19,299	—	—	—	—	1,455	20,754
Other Grinding Supplies.....	Lb.	932,000	—	—	—	—	114,000	1,046,009
	\$	23,300	—	—	—	—	2,602	25,902
Total .....	\$	100,146	28,744	23,263	42,519	—	29,105	223,777
<i>Miscellaneous, Mostly Chemicals—</i>								
Coal Tar Oils.....	Gal.	70,387	151,300	—	37,108	—	50	258,845
	\$	18,314	9,121	—	12,716	—	16	40,167
Copper Sulphate.....	Lb.	—	186,043	—	316,827	—	—	502,870
	\$	—	13,758	—	24,011	—	—	37,769

Table 232—Mine and Mill Materials used in the Mining Industry in British Columbia by Industries, 1923—Concluded

	Copper- gold mining	Silver- lead-zinc mining	Gold quartz mining	Smelting	Non- Metallic mining	Structural materials	Total
<i>Miscellaneous, Mostly Chemicals—Con.</i>							
Cyanide..... Lb.	-	20,760	228,660	19,240	-	-	268,660
\$	-	4,203	49,760	5,382	-	-	59,345
Hydrofluosilicic Acid..... Lb.	-	-	-	199,760	-	-	199,760
\$	-	-	-	40,829	-	-	40,829
Lead Acetate..... Lb.	-	-	2,544	-	-	-	2,544
\$	-	-	489	-	-	-	489
Lime..... Lb.	583,753	-	457,100	276,430	-	-	1,317,283
\$	5,794	-	5,456	2,322	-	-	13,572
Mercury..... Lb.	-	10	-	-	-	-	10
\$	-	15	-	-	-	-	15
Mineral Oils..... Gal.	-	150,665	-	-	-	-	150,665
\$	-	8,217	-	-	-	-	8,217
Muriatic Acid..... Lb.	-	-	1,930	-	-	-	1,930
\$	-	-	179	-	-	-	179
Nitrate of Soda..... Lb.	-	-	-	52,395	-	-	52,395
\$	-	-	-	2,274	-	-	2,274
Oleic Acid..... Gal.	-	-	-	12,400	-	-	12,400
\$	-	-	-	2,403	-	-	2,403
Pine Oils..... Gal.	16,193	920	220	10,205	-	-	27,538
\$	15,199	836	461	6,757	-	-	23,253
Soda Ash..... Lb.	-	605,508	-	1,428,560	-	-	2,034,068
\$	-	22,283	-	31,976	-	-	54,259
Sodium Sulphide..... Lb.	6,850	-	-	-	-	-	6,850
\$	341	-	-	-	-	-	341
Sulphur..... Lb.	-	-	-	161,000	-	-	161,000
\$	-	-	-	3,188	-	-	3,188
Sulphuric Acid..... Lb.	-	37,452	13,813	3,226,616	-	-	3,277,881
\$	-	615	337	39,010	-	-	39,962
Zinc..... Lb.	-	-	26,170	-	-	-	26,170
\$	-	-	3,380	-	-	-	3,380
Unspecified..... \$	1,433	-	-	-	-	-	1,433
Total..... \$	41,081	59,048	60,062	170,868	-	16	331,075
Grand Total..... \$	637,781	200,555	201,702	213,887	589,544	49,353	1,892,322

## METALLIC MINERAL INDUSTRIES

## ALLUVIAL GOLD MINING INDUSTRY

Owing to the seasonal nature of placer mining and to the isolated location of some of the fields and operators, it is almost impossible to prepare a complete report on this important phase of metal mining. During 1923, recoveries of placer gold were increased in both British Columbia and the Yukon. Alluvial gold mining is still of much greater importance in the Yukon Territory than it is in British Columbia. After the early rush of 1898 to 1905 when the individual operators had worked out all the richer ground, mining was continued by the methods of dredging and of hydraulic workings; during the past decade or more the major portion of the placer gold recovered has been won by these methods. Small individual operators still continue mining with fair returns.

It was not possible to secure full and complete returns from the British Columbia operators, and the tables below refer only to the Yukon. The figures of production for British Columbia are as published by the Department of Mines of that province. During 1923 the net values of the placer gold recovered totalled \$1,226,705 for the Yukon and \$420,000 for British Columbia as against \$1,095,547 and \$364,800, respectively, during the previous year. In the Yukon, 4 companies recovered 61,957 crude ounces of gold valued at \$1,015,233 or over 85 per cent of the total quantity won, and employed 307 workers to whom they paid \$467,807 in wages. The total amount of earth handled was 7,115,395 yards, some 137.5 miles of ditches were kept in operation and repair by these 4 operators. There were also 134 prospectors or individual lessees who carried on work during the season, accounting for 12,911 crude ounces. Comparative statistics of gold recovered, cubic yards of earth moved and other data are shown for 1922 and 1923.

**Table 233.—Summary Statistics of Placer Mining in the Yukon Territory, 1922 and 1923**

Item	1922	1923
Time in operation..... months	6-8	6-8
Number of wage-earners.....	374	307
Wages paid.....	\$514,196	\$467,807
Crude ounces gold recovered.....	67,962	74,868
Value of gold and silver.....	\$1,095,547	\$1,226,705
Quicksilver purchased..... lb.	576	300
Quantity of material handled..... cubic yards	7,186,723	8,600,160
Length of ditches..... miles	184	184

Since the mining in the Yukon Territory is regulated by the federal government it is possible to include in this description, the reports of the different mining recorders supplied through the courtesy of the Mining Lands Branch of the Department of the Interior. The principal operators, and the creeks worked on, were as shown in the Table 234:

Table 234.—Showing Location of Principal Operators in the Yukon Territory, 1923

Name of Company	Claims Operated
New North West Corporation.....	905 placer claims.
Burrall and Baird, Ltd.....	78 placer claims, 3 leases.
Yukon Gold Company.....	349 placer claims, 3 leases.
Collins Wernberg and Collins.....	Miller Creek Concession.
35 Prospectors.....	Bonanza Creek District.
13 ".....	Glacier Creek District.
4 ".....	Big Gold Creek.
8 ".....	Sixty Mile Creek.
3 ".....	Miller Creek.
2 ".....	Bedrock Creek.
9 ".....	Thistle Creek District.
1 ".....	Edas Creek District.
9 ".....	Kirkman Creek District.
20 ".....	Gull Creek.
4 ".....	Haggart Creek.
3 ".....	Hyet Creek.
2 ".....	Seattle Creek.
5 ".....	Beaver River.
1 Limited Company.....	Teslin District.
9 prospectors.....	Kluane District.
6 prospectors.....	Livingston Creek.
138 Total.	

## Report of the Gold Commissioner, Dawson, for the Year ending March 31, 1924

The amount of placer gold mined during the year was in excess of the previous year, the export tax having been paid on 75,757.89 ounces as against 68,850.60 ounces last year.

*Yukon Gold Company.*—This company operated one dredge on Creek Claims Nos. 32-A to 36 inclusive on Gold Run Creek during a dredging season of 85 days from June 15th to September 30th handling 447,601 cubic yards of material.

Hydraulic mines were operated at the following points: Adams Hill, King Solomon, Oro Fino Hill, Trail Gulch, Lovett, Right Limit, American Gulch, Cheechaco, Gold Hill; 1,320,360 cubic yards was handled.

The hydro-electric power plant of the company on the Twelvemile River furnished adequate power for the dredging and other operations of the company requiring power. The daily average of men employed during the mining season was as follows:—

Dredges and thawing (April to October).....	35
Hydraulic Mines ".....	40
Ditch ".....	27
Otherwise employed ".....	26
Total.....	128

*Burrall and Baird, Limited.*—This company operated dredges Canadian Nos. 2 and 4 in the Klondike valley on Hydraulic Mining Lease No. 18 and Dredging Lease No. 24. Canadian No. 2 operated near the lower end of Hydraulic Mining Lease No. 18 from the 14th of May to the 12th of December, dredging 2,137,881 cubic yards of material. Dredge No. 4 operated on the upper end of the leasehold near the mouth of Hunker Creek from the 12th of May to the 1st of November, dredging 1,908,753 cubic yards of material. Prospecting was carried on in advance of these dredges by means of a keystone drill and shaft sinking.

A portion of the gravels in the Klondike valley are frozen, and to demonstrate the feasibility of thawing these frozen gravels 150,000 cubic yards was thawed by the cold water process on the course laid out for Dredge No. 2. Much of the naturally-thawed ground on Hydraulic Lease No. 18 has now been dredged and the future operations of this company in the Klondike valley will depend in large measure upon their being able to thaw these frozen gravels cheaply in a large way.

The pumping plant near the mouth of Hunker Creek, operated by this company by power furnished from the North Fork, operated throughout the season and furnished an adequate supply of water to the operations of M. H. Jones on Last Chance.

In addition to these field operations, a considerable force of men was employed in the electric repair shop, welding shop, warehouse, mess, and stables at the headquarters of the company at Bear Creek. An average of 70 men was employed by this company throughout the season.

*The New North West Corporation, Limited.*—This company and its subsidiaries are the holders of 905 placer mining claims in the Indian River Watershed. Two dredges were operated by the company. The North West No. 1 which commenced the season on No. 11 below Lower Discovery on Dominion Creek and worked upstream 3,500 feet, was in operation from May 24th to October 30th, and dredged 608,177 cubic yards of material. Dredge North West No. 2 which commenced the season on No. 242 below Lower Discovery on Dominion Creek and worked up to No. 236 below Lower Discovery, was in operation from May 20th to November 7th, and dredged 688,614 cubic yards of material.

All of the gravels dredged by No. 2 and 57 per cent of the gravels dredged by No. 1 were frozen, and except in the early spring when a certain amount of steam thawing was done, water was used exclusively for thawing. Prospecting in advance of these dredges was carried on by means of keystone drill and by shaft-sinking.

This company operated the hydro-electric power plant at the North Fork of the Klondike River, and furnished an adequate supply of power for the operation of their own dredges, the dredges and machine shops of Burrall and Baird, Limited, the pumping plant at Hunker Creek, and the Dawson Electric Light and Power Company, Limited, for lighting the City of Dawson. The number of men employed during the season averaged seventy-seven.

*Miller Creek Concession.*—Sank 11 shafts as follows: 35 feet, 50 feet, 66 feet, 75 feet, 70 feet, 82 feet, 81 feet, 24 feet, 40 feet, 26 feet and 24 feet, respectively. Uncovered by drifting 30,000 square feet of bedrock.

## THE AURIFEROUS QUARTZ MINING INDUSTRY

The auriferous quartz mining industry includes that group of mines which produce an ore, the main constituent of value in which is gold that may be recovered either by amalgamation or cyanidation. This group is important in Ontario where the noted mines of the Porcupine and Kirkland Lake areas are operated. The ores mined are treated in cyanide mills on the properties. In British Columbia some mines of this group export their ores or concentrates. Closely allied, is the copper-gold-silver group comprising mines which concentrate their ores, and ship the concentrates to smelters for treatment; this latter group, which is important in British Columbia is treated in the following section.

In Canada during 1923, there were 65 auriferous quartz mines operating and of these 33 produced bullion or shipped ores, while 32 carried on development operations only. In order of importance, the provinces with the number of operating mines in each were Ontario, 41; British Columbia, 11; Nova Scotia, 10; and Manitoba, 3 mines. The corresponding data for 1922 were Ontario, 41; British Columbia, 18; Nova Scotia, 11; and Manitoba, 4 mines. The Mines of Ontario produced over 90 per cent of the gold derived from this group. In 1923 the data showed 2,478,912 tons mined and 1,947,913 tons cyanided as against 2,431,340 tons mined and 2,342,213 tons of ore cyanided in 1922. Crude bullion shipped amounted to 1,227,228 valued by the mines at \$20,383,549 in 1923 as against 1,279,266 ounces valued at \$21,037,732 in 1922. These figures which take no account of the exchange premium gained, give some indication of the rapid development of gold mining especially in Ontario.

Economic conditions which were improving throughout the world during 1922 and 1923, tended to intensify the urgent need for gold on the part of most countries. During the war and after, the world's annual production of gold actually declined about 23 per cent, owing to the increased cost of material and labour, so that in addition to the extra need of gold to make up the discrepancy between paper money and its gold-backing, there is also the necessity of making good the deficiency in production. Conditions, therefore, clearly point to the importance of an increased gold production. The following figures emphasise the shortage in this metal and the increasing importance of Canada's position as a gold producer, as compared with South Africa, the world's greatest producer.

**Table 235.—Comparative Figures of Gold Production, for the World, South Africa and Canada, 1915, 1921-1923**

Year	*World's output	*South Africa's output	Canada's output
	fine ounces	fine ounces	fine ounces
1915.....	22,593,833	10,538,588	918,056
1921.....	15,974,962	9,041,595	926,329
1922.....	15,458,103	8,006,335	1,263,364
1923.....	17,677,552	10,140,144	1,233,341

\* Year Book of the American Bureau of Metal Statistics in 1923.

While the production of gold during 1923 in Ontario was slightly less than in the previous year due entirely to shortage of power in the early months of the year, the mines have continued to develop and expand. The Hollinger Mines were preparing to increase the tonnages handled per day and the McIntyre in addition to surface development had driven the main shaft to a depth of 2,500 feet, the deepest in the camp. The 10-stamp mill of the Davidson Consolidated was destroyed by fire in July; the mills of the Vipond and Night Hawk-Peninsular commenced operations in the fall. Water-power developments were also continued both for the Porcupine and Kirkland Lake fields. The 6 mines of the latter camp were all active during the period, and while milling much smaller tonnages than in Porcupine, the assay content of the mill heads were in some mines as high as \$24.00 per ton, as against \$11.40, the highest in Porcupine. The extension of the Kirkland Lake Branch of the T. & N. O. Railway to Kirkland and Larder Lakes, brought attention to the many important properties in the latter camp. The gold producers of Ontario were successful in securing licenses to export their gold to the United States when the Federal Government, due to changed conditions, was no longer willing to pay for new gold in New York funds.

In Nova Scotia, development work was continued and gold-bearing arsenical concentrates were exported to Europe. Many small properties were active in mining the higher grade free-milling gold ores but as these operations were of an intermittent character complete reports were not received. The rush to northern Quebec in the Rouyn area continued throughout 1923 and several large companies took options on claims and carried on diamond drilling, trenching and sinking operations. Most encouraging results were noted at the close of the year, but further investigation was required to complete the study of the different outcroppings. In Manitoba, the gold fields, which have been known for several years, continued to attract the interest of many companies seeking new properties. The shaft of the Bingo Mine on the east side of Herb Lake was around 250 feet in depth with important amounts of drifting done (both north and south) on the ore body. Twenty-five men were employed. At Elbow Lake, surface development was continued throughout the summer. All the showings were in a condition to attract the attention of responsible mining companies. While fewer gold mines were operated in British Columbia during the period, the production from such mines as the Premier, the IXL, and Nickel Plate was important, and showed no loss although there was a slight decrease in the quantity of gold recovered within the province by amalgamation and cyanidation.

Statistics of capital employed in the gold-mining industry for 1921 covered the following: capital invested in (1) cost of lands, buildings, plant, machinery and tools, (2) cost of supplies and stocks on hand, and (3) cash, trading, and operating accounts. Since many mining lands are held by organized companies in fee-simple having been crown-granted, the capital invested in the land is often represented largely by shares of the capital stock. There are also cases where sums of money have been paid out as part payment but on the whole the proportion of cash to stock would be small. For this reason the 1922 questionnaire for this group took no account of actual capital invested in land and the totals shown for the year refer to (1) cost of buildings, plant, machinery, and tools, (2) cost of supplies and stock on hand and (3) cash, trading and operating accounts. In 1923 owing to the development in Ontario, where many claims have been sold for cash, the item cost of lands was re-introduced and the figures for that year are therefore on a somewhat different basis than for 1922. The capital employed in 1923 totalled \$77,574,976 for 65 mines as against \$35,368,094 in 1922 for 79 mines. The number of mines bears very little weight in these statistics since several in 1922 were merely

prospects in which the capital invested if any, consisted mainly of the time spent by the individual owner.

The number of producing mines increased from 32 in 1921 to 38 in 1922, and in 1923 stood at 33. Bullion shipped rose from 913,869 crude ounces in 1921 to 1,279,266 ounces in 1922, and dropped to 1,227,228 ounces in 1923 with corresponding differences in the precious metal content. In 1923 the net value of the bullion shipped was \$20,670,007, including exchange premium amounting to \$286,458 as against \$21,246,998 in 1922 when the exchange amounted to \$209,266.

The shipments of ores by this group of mines were mostly from the province of British Columbia. The different fields in that province have not yet applied the cyanide process so generally as in Ontario, although at the Premier mine, Nugget gold mine and the Nickel Plate mine it is in use. In other cases the gold ores now being worked do not lend themselves so readily to the cyanide treatment, and the custom is generally to concentrate and ship the product to copper smelters. A case of this kind is that of the Hedley Gold Mining Company, the ore of which carries arsenic in addition to important quantities of gold and silver. Part of the precious metal was recovered by cyanidation, and the concentrates exported. Another property (IXL Mine) produced a high grade of gold ore, much of which was hand-picked and shipped direct to smelters.

The quantity of ores shipped rose from 16,311 tons in 1921 to 78,685 tons in 1922, and 96,896 tons in 1923, the net values of which to the mines were \$1,915,747; \$4,873,212, and \$4,351,830, respectively. These large gains in tonnage were mainly accounted for by the continued development of the Premier mine in the northern part of the province. This property produced a precipitate very heavy in silver and, in addition, shipped high-grade ores and concentrates to Tacoma, Washington, U.S.A., and to Anyox, B.C.

There were increases in the number of salaried employees in both British Columbia and Ontario gold mines. The figures for Nova Scotia and Manitoba were small, since few large organizations for gold mining were in operation in those provinces. The number of major officers in the operating companies increased from 381 to 438, and salaries paid rose from \$553,307 to \$993,457.

Throughout the industry, but more particularly in the highly developed areas in Ontario, the number of men employed was greater in 1923 than in the preceding year; the number advanced from 5,441 in 1922 to 5,524 in 1923, and salaries and wages showed a proportional gain from \$8,011,682 to \$8,961,434.

Fuel costs for the whole auriferous quartz mining section increased from \$353,453 in 1922 to \$574,939 in the following year.

Miscellaneous expenses were lower in 1923 than in the previous year by almost \$2,000,000.

**Table 236.—Capital Employed in the Auriferous Quartz Mining Industry in Canada, 1922 and 1923**

	Nova Scotia		Ontario		Manitoba		British Columbia		Canada	
1922	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
Producing.....	9	60,500	13	25,299,933	2		14	3,925,278	38	29,285,711
Operating but not producing.....	2	7,000	33	5,994,959			6	80,424	41	6,082,353
<b>Total.....</b>	<b>11</b>	<b>67,500</b>	<b>46</b>	<b>31,294,892</b>	<b>2*</b>		<b>20</b>	<b>4,005,702</b>	<b>79</b>	<b>35,368,094</b>
1923	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
Producing.....	8	634,000	18	51,955,910	1		6	9,104,820	33	61,694,730
Operating but not producing.....	2	50,500	23	15,428,306	2		5	181,236	32	15,660,042
<b>Total.....</b>	<b>10</b>	<b>684,500</b>	<b>41</b>	<b>67,384,216</b>	<b>3</b>	<b>220,204</b>	<b>11</b>	<b>9,286,056</b>	<b>65</b>	<b>77,574,976</b>

\*Data not available.

† Includes \$220,204 for Manitoba.

Table 237.—Ores Mined and Milled, Crude Bullion Produced and Shipped from the Gold Mines in Canada, 1922 and 1923

	Nova Scotia	Ontario	Manitoba	British Columbia	Canada
<b>1922</b>					
Number of producing mines.....	9	13	2	14	38
Ore mined..... tons	6,107	2,272,866		152,367	2,431,340
Ore milled..... " "	6,006	368,400	120	74,567	449,093
Tailings retreated..... " "				3,000	3,000
Bullion recovered by amalgamation..... crude oz.	768	135,066	103	1,042	136,979
Ores cyanided..... tons	(a) 2,268,736			73,477	2,342,213
Bullion recovered by cyanidation..... crude oz.		1,123,902		13,025	1,141,927
Bullion shipped..... " "	(b) 683	1,259,378	(c) 120	19,085	1,279,266
Contents of bullion shipped—Gold..... fine oz.	555	999,469	103	17,294	1,017,421
Silver..... " "	33	163,622	13	1,196	164,864
Net value..... \$	12,389	20,745,268	2,131	277,945	21,037,732
Amount of exchange premium..... \$		208,717	9	539	209,266
<b>1923</b>					
Number of producing mines.....	8	18	1	6	33
Ore mined..... tons	1,090	2,287,438		190,384	2,478,912
Ore milled..... tons	228	2,267,289		102,159	2,369,672
Bullion recovered by amalgamation..... crude oz.	504	147,626	30	145	148,305
Ores cyanided..... tons		1,853,202		94,711	1,947,913
Bullion recovered by cyanidation..... crude oz.		1,066,108		10,918	1,077,026
Bullion shipped..... crude oz.	544	1,214,964	30	11,690	1,227,223
Contents of bullion shipped—Gold..... fine oz.	489	969,743	23	11,036	981,291
Silver..... fine oz.	25	151,535	4	650	152,214
Net value..... \$	10,583	20,143,938	478	228,550	20,388,549
Net value of ores, slags and residues sold..... \$	2,000	22,403		4,327,427	4,351,830
Amount of exchange premium..... \$		280,119		6,339	286,458
<b>Total net receipts..... \$</b>	<b>12,583</b>	<b>20,446,460</b>	<b>478</b>	<b>4,562,316</b>	<b>25,021,837</b>

(a) Includes 368,400 tons amalgamated.

(b) Royal Mint Report gives 1,042 fine oz. received from Nova Scotia, the difference being made up by small shipments consigned by prospectors and lessees.

(c) Does not include all of Manitoba's 1922 production. Royal Mint reported receipt of 156 fine oz., difference being made up by small consignments from individuals.

Table 238.—Ores, Concentrates and Slags Shipped from the Gold Mines in Canada, 1922 and 1923

Item	Ontario and Nova Scotia mines shipping		British Columbia mines shipping		Canada
	To Canadian smelters	To Foreign smelters	To Canadian smelters	To American smelters	
1922					
Number of mines.....		5	7	8	(a) 18
Tons of ore, etc., shipped.....		58	30,950	(b) 47,677	78,685
Metal content—					
Gold.....oz.		667	28,125	(c) 104,913	133,705
Silver.....“		1,043	848,838	3,638,800	4,488,681
Copper.....lb.			213	2,808	3,021
Net value.....\$		13,792	969,923	3,889,497	4,873,212
1923					
Number of mines.....	3	2	4	3	(a) 11
Tons of ore, etc., shipped.....	224	105	35,066	61,703	96,896
Metal content—					
Gold.....oz.	115	1,045	24,838	99,554	125,552
Silver.....“		7,829	684,427	2,077,102	2,769,358
Copper.....lb.		45,000		121	45,121
Net value.....\$	1,165	23,238	1,300,090	3,027,337	4,351,830

(a) During 1922 two companies, and in 1923, one company in British Columbia shipped to both American and Canadian smelters.

(b) Includes one ton of slags.

(c) Contains 731 ozs. crude base bullion.

**Table 239.—Employees, Salaries and Wages in the Auriferous Quartz Mining Industry in Canada by Provinces, 1922 and 1923**

Province	1922					1923						
	Number of employees				Salaries and wages	Number of employees				Salaries and wages		
	On salary	Wage-earners		Total employees		On salary	Wage-earners		Total employees			
		Surface	Under-ground				Mill	Surface			Under-ground	Mill
					\$						\$	
Nova Scotia.....	4	30	19	(a)	53	25,973	6	15	13	2	36	25,091
Ontario.....	314	1,469	2,548	387	4,718	6,998,901	362	1,231	2,901	425	4,919	7,841,227
Manitoba.....	1	30	.....	(a)	31	8,457	7	10	24	.....	41	58,824
British Columbia.....	62	364	213	(a)	639	978,351	63	180	226	59	528	1,036,292
Canada.....	381	1,893	2,780	387	5,441	8,011,682	438	1,436	3,164	486	5,524	8,961,434

(a) Mill employees included with Surface.

**Table 240.—Number of Wage-Earners in the Auriferous Quartz Mining Industry in Canada by Months, 1922 and 1923**

Month	1922				1923			
	Mine			Total	Mine			Total
	Surface	Under-ground	Mill		Surface	Under-ground	Mill	
January.....	1,301	2,252	357	<b>3,910</b>	1,236	3,001	475	<b>4,712</b>
February.....	1,274	2,299	353	<b>3,926</b>	1,226	2,956	436	<b>4,618</b>
March.....	1,345	2,356	358	<b>4,059</b>	1,220	2,838	407	<b>4,465</b>
April.....	1,538	2,296	371	<b>4,205</b>	1,240	2,784	387	<b>4,411</b>
May.....	1,713	2,467	392	<b>4,572</b>	1,376	3,051	453	<b>4,880</b>
June.....	1,886	2,724	390	<b>5,000</b>	1,525	3,238	477	<b>5,240</b>
July.....	1,878	2,857	399	<b>5,134</b>	1,553	3,286	512	<b>5,351</b>
August.....	1,897	2,849	400	<b>5,146</b>	1,507	3,361	503	<b>5,371</b>
September.....	1,978	2,918	394	<b>5,290</b>	1,539	3,300	523	<b>5,362</b>
October.....	1,982	2,740	400	<b>5,122</b>	1,639	3,374	554	<b>5,567</b>
November.....	1,961	2,853	408	<b>5,222</b>	1,636	3,411	547	<b>5,594</b>
December.....	1,817	2,885	396	<b>5,098</b>	1,531	3,371	553	<b>5,455</b>
<b>Average.....</b>	<b>1,893</b>	<b>2,780</b>	<b>387</b>	<b>5,060</b>	<b>1,436</b>	<b>3,164</b>	<b>486</b>	<b>5,086</b>

**Table 241.—Miscellaneous Expenses in the Gold Mining Industry in Canada, by Provinces, 1922 and 1923**

Province	1922	1923
	\$	\$
Nova Scotia.....	7,804	13,469
Ontario.....	6,246,657	5,427,717
Manitoba.....	4,127	500
British Columbia.....	1,124,928	219,975
<b>Canada.....</b>	<b>7,383,516</b>	<b>5,661,661</b>

**THE COPPER-GOLD-SILVER MINING INDUSTRY**

The most important deposits of this group are found in British Columbia, from which province the greater portion of Canada's copper production is derived. This class of mines, as indicated by the group name, produces ores which are predominantly copper-bearing, although important quantities of gold and silver are also present. Broadly speaking, these ore deposits may be divided into two classes, viz., low-grade and high-grade copper ores, but there are many deposits which are difficult to classify under either heading. The former class, which is presently the more important, comprises those which contain from one to two per cent of copper, and is represented by such properties as the Britannia on Howe Sound, and the Hidden Creek,

near Anyox, in the northern part of the province. The higher grade deposits, of which there are many, have not been so well developed, and are smaller in size. This group is represented by such mines as the Maid of Erin and the Venus, the copper content of the ores from these mines ranging from 20 per cent to 9 or 10 per cent. In 1923 there were 14 active mines, only 8 of which shipped ore. Of the 14 properties, 12 were located in British Columbia, 1 in Alberta, and 1 in Quebec.

Due to the fact that the Britannia Mining and Smelting Company, formerly one of the largest producers, was inactive during 1922, and as the figures for capital employed by that company were not included in the compilation during that year the capital employed in this industry was shown as \$27,091,085 in 1922, as against \$36,872,455 in 1923. There was included in these totals the actual capital invested by the Granby Mining, Smelting and Power Company, as copper-producing was the most important department of that large company, which, in addition to copper mines and a copper smelter, operates large coal mines, coke-making plants, quartz and limestone quarries. The figures for that company, which are included here, are not again repeated in the totals for capital employed in coal mines. The capital invested by the Consolidated Company at Trail is included in the chapter on metallurgy while the different mining properties are accounted for in the silver-lead-zinc and copper-gold-silver groups. The capital employed by active mines does not show any great changes from year to year, unless several highly developed properties commence operating in a single twelve-month period. The figures given in the following table represent capital invested in tangible improvements and are relative only, in that they do not include important sums used for provisions, wages and so forth, spent in connection with prospecting.

Both 1921 and 1922 were difficult years for producers of copper but in 1923 a slight improvement in the price enabled the larger companies to expand their operations. The Granby Company which remodelled and improved the crushing department and hydro-electric plants in 1922 was idle for a period in the fall because of a landslide. This company also undertook to reopen the Allenby copper mine, but a drop in the price of copper made it necessary for them to close down again in the fall. This plant which has a capacity of 2,000 tons per day would materially increase the British Columbia production of copper if conditions warranted steady operation. The Tidewater Copper Company on Sidney Inlet which produced ore in 1920 and in later years and which is fully equipped with a plant and mill was closed down towards the end of the year. The Britannia Mining and Smelting Company after a year of non-production in 1922 in which the activities of the company were centered in the reconstruction of the mill so unfortunately destroyed in 1921, reopened their milling department in February, 1923 and during the period treated as high as 3,000 tons in one day; the monthly average during the summer exceeded 2,700 tons per day. The re-appearance of this company as a producer was largely responsible for the great increase in the production of copper. The copper properties of the Consolidated Mining and Smelting Company in Rossland are not usually so greatly affected as others by the low price of copper since their ores carry good values in gold. During 1923 these properties were idle. While British Columbia is the most important copper-producing province in the Dominion, there are many important deposits in Manitoba, Ontario and Quebec, which are well beyond the prospect stage. The low price of copper and the development of copper deposits of South America, United States and Africa, many of which can be operated at lower costs than those in Canada, have had a deterrent effect on Canadian developments.

During 1923 the copper content of ores and concentrates shipped from the mines in Canada increased almost 100 per cent, rising from 32.5 million pounds to 62.3 million pounds due entirely to the increase in the tonnage of concentrates exported for treatment which were almost 9 times the quantity exported in 1922. The total tonnage of ores and concentrates shipped from the mines was 911,587 tons in 1923 as against 950,295 tons shipped in the preceding year.

The number of salaried officials and wage-earners employed and salaries and wages paid were more than double, while miscellaneous expenses showed a corresponding increase. The largest item of fuel consumed was that of oil for burning purposes. This was largely used in British Columbia where the mines draw their supplies from the southern oil fields, benefitting by the cheap water transportation.

**Table 242.—Capital Employed in the Copper-Gold-Silver Mining Industry in Canada, 1922 and 1923**

	British Columbia		Ontario and Quebec		Canada	
	1922	1923	1922	1923	1922	1923
	\$	\$	\$	\$	\$	\$
Producing mines.....	26,961,448	34,243,321	.....	1,359,837	26,961,448	35,603,058
Operating but not producing mines.....	123,637	1,269,397	6,000	.....	129,637	1,269,397
<b>Total.....</b>	<b>27,085,085</b>	<b>35,512,618</b>	<b>6,000</b>	<b>1,359,837</b>	<b>27,091,085</b>	<b>36,872,455</b>

**Table 243—Shipments from Copper-Gold-Silver Mines of Canada, 1922 and 1923**

Destination	Quantity	Net Value	Content as determined by settlement assay		
			Gold	Silver	Copper
	tons	\$	fine ozs.	fine ozs.	pounds
<b>1922</b>					
4 Mines shipped to Canadian smelters—					
Ores.....	(a) 870,579	1,062,426	15,252	399,113	29,432,782
Concentrates.....	168	3,050	179	242	7,426
5 Mines shipped to foreign smelters—					
Ores.....	(b) 30,740	269,976	466	38,833	1,792,327
Concentrates.....	10,100	696,219	32,556	31,535	1,292,257
<b>Total.....</b>	<b>911,587</b>	<b>2,031,671</b>	<b>48,453</b>	<b>469,723</b>	<b>32,524,792</b>
<b>1923</b>					
3 Mines shipped to Canadian smelters—					
Ores.....	856,674	1,292,661	10,831	461,319	37,488,660
Concentrates.....	45	1,057	8	27	12,266
5 Mines shipped to foreign smelters—					
Ores.....	3,673	36,061	64	4,271	271,083
Concentrates.....	89,903	3,031,707	35,786	128,797	24,548,204
<b>Total.....</b>	<b>950,295</b>	<b>4,361,486</b>	<b>46,689</b>	<b>594,414</b>	<b>62,318,213</b>

(a) Includes 4,819 tons pyrites valued at \$5,460, sold for sulphur content.

(b) Includes 26,002 tons of flue dust.

**Table 244.—Miscellaneous Expenses in the Copper-Gold-Silver Mining Industry in Canada, 1922 and 1923**

	1922	1923
	\$	\$
Producing mines.....	374,478	726,158
Operating but non-producing mines.....	11,015	455
<b>Total.....</b>	<b>385,493</b>	<b>726,613</b>

**Table 245.—Employees, Salaries and Wages in the Copper-Gold-Silver Mining Industry in Canada, 1922 and 1923**

	1922			1923		
	Number of employees		Salaries and wages	Number of employees		Salaries and wages
	Male	Female	\$	Male	Female	\$
<b>SALARIED EMPLOYEES—</b>						
Superintendents and managers.....	12	.....	41,174	27	.....	100,196
Technical employees.....	10	.....	19,417	28	.....	60,555
Clerks, stenographers.....	22	2	38,348	40	.....	53,551
<b>Total.....</b>	<b>44</b>	<b>2</b>	<b>98,939</b>	<b>96</b>	.....	<b>214,302</b>
<b>WAGE-EARNERS—</b>						
Surface.....	318	.....	1,051,336	864	.....	2,789,990
Underground.....	462	.....		830	.....	
<b>Total.....</b>	<b>780</b>	.....	<b>1,051,336</b>	<b>1,694</b>	.....	<b>2,789,990</b>
<b>Grand Total.....</b>	<b>824</b>	<b>2</b>	<b>1,150,275</b>	<b>1,790</b>	.....	<b>3,004,292</b>

**Table 246.—Number of Wage-Earners in the Copper-Gold-Silver Mining Industry in Canada, by Months, 1922 and 1923**

Month	1922			1923		
	Number of wage-earners			Number of wage-earners		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	297	475	772	726	561	1,287
February.....	287	451	738	741	676	1,417
March.....	279	475	754	744	654	1,398
April.....	267	456	723	767	760	1,527
May.....	277	463	740	878	811	1,689
June.....	286	474	760	978	734	1,762
July.....	263	431	694	965	873	1,838
August.....	272	425	697	941	899	1,840
September.....	250	392	642	966	931	1,897
October.....	246	418	664	918	958	1,876
November.....	253	446	699	886	1,007	1,893
December.....	259	438	697	857	1,036	1,893
Average.....	318	462	780	861	830	1,694

### THE SILVER-COBALT MINING INDUSTRY

This industry which is centered mainly around Cobalt with important outlying fields in South Lorrain 20 miles to the south and at Gowanda about 50 miles to the west, produces the major portion of the silver output of Ontario. The following description which deals with the mining and milling sections does not include any statistics relating to the metallurgical operations carried on in other parts of the province in the treatment of the ores. The data in connection with the latter section of the industry are given in the chapter on metallurgical works which covers all the operating non-ferrous smelters treating Canadian ores. The capital actually invested in the mining part of the industry has not varied greatly during the past three years and was given as \$31,334,050 for 1923 or a gain of almost two million dollars above the previous year. As only operating properties are included in the compilation the decreases or increases as shown in Table 247 should not be taken as absolute but as relative in their nature, since occasionally important properties in which the investment is large are idle for a year and as a result, are excluded from the compilation. The numbers of operating mines shown in Table 248 include all properties shipping one ton of ore or more; as thus computed the number in 1923 was only 24 as against 30 in 1922 and 39 in 1921, but only about half of the number were shippers to the extent of 1,000 tons or more.

In 1923, the tonnage of ore mined and milled in the Cobalt district was greater than in 1922. On the other hand, the total quantity cyanided fell from 273,597 tons to 164,051 tons; but the recovery by the cyanide process was relatively much greater per ton of material treated for in spite of the reduced tonnage, the recovery of silver only decreased from 6,820,686 ounces in 1922 to 6,278,830 ounces in 1923. The decrease in quantities cyanided was due to the destruction of the O'Brien mill towards the end of 1922. One of the principal features in the development of the Cobalt area was the continued favorable progress in South Lorrain of the Keeley and the Frontier mines. English capital invested there has met with fine success; the South Lorrain area shipped well over 3 million ounces of silver in ore and concentrates during the period. Two new shippers in the Cobalt area, the Colonial Mine and the Genesee both shipped ores for treatment. The leading producers of silver ore were as follows: Coniagas, 146,643 tons; Nipissing, 82,243 tons; Mining Corporation (Cobalt properties), 65,780 tons; O'Brien, 46,853 tons; McKinley-Darragh-Savage, 44,769 tons, and Keeley, 28,040 tons. The list of leading producers of silver included: Nipissing mines, 3,392,929 ounces; Keeley mine, 1,655,323 ounces; Lorrain Operating Company, 1,300,323 ounces; Coniagas mines, 1,273,710 ounces; O'Brien, 1,025,865 ounces; and Mining Corporation (Cobalt properties), 928,026 ounces.

Shipments of ores and concentrates to points outside the Cobalt camp fell from 9,931 tons in 1922 to 5,869 tons in 1923.

Salaried officials and wage-earners increased slightly in number from 1,403 to 1,408, the gain in underground and surface labourers and in salaried officials being offset by the decrease in mill workers. Notwithstanding this slight increase, the total wages rose from \$1,532,736 in 1922 to \$1,949,738 in 1923.

Miscellaneous expenses dropped slightly from \$2,271,186 to \$2,132,114.

**Table 247.—Capital Employed in the Silver-Cobalt Mining Industry in Canada, 1922 and 1923**

	1922	1923
	\$	\$
Capital employed as represented by—		
Cost of lands, buildings, and equipment.....	22,190,416	24,073,368
Cost of supplies and stock on hand.....	960,121	1,091,258
Cash, trading and operating accounts and bills receivable.....	6,309,066	6,169,424
<b>Total.....</b>	<b>29,459,603</b>	<b>31,334,050</b>

**Table 248.—Principal Statistics of Silver-Cobalt Mines and Mills Operating in Canada, 1922 and 1923**

	1922	1923
Number of mines in operation.....	30	24
Ore mined..... Tons	426,445	437,222
Ores treated..... Tons	405,640	436,896
Tailings treated..... Tons	91,369	822
Concentrates produced..... Tons	5,099	7,300
Treated in Customs concentrators..... Tons	24,788	.....
Concentrates produced..... Tons	381	.....
Quantity of material cyanided..... Tons	273,597	164,051
Bullion recovered..... Fine Ounces	6,820,686	6,278,830
Bullion sold..... Fine Ounces	7,526,646	6,018,259
Net value to operators..... \$	5,125,802	3,928,311

**Table 249.—Shipments of Ores, Concentrates and Residues from the Cobalt Camp, 1922 and 1923**

Kind	Quantity	Gross value (a)	Net value (b)	Metallic content paid for		
				Silver	Cobalt	Copper
1922	Tons	\$	\$	fine ozs.	lb.	lb.
<i>To Canadian Smelters—</i>						
Ores.....	804	971,221	912,387	1,442,551	235,454	.....
Concentrates.....	7,657	2,067,394	1,954,062	2,527,109	461,740	17,024
<i>To Foreign Countries—</i>						
Ores (c).....	20	10,972	10,505	15,994	.....	.....
Concentrates.....	1,450	435,225	371,655	660,307	128,849	8,146
<i>Total Shipments—</i>						
Total ore and concentrates.....	9,931	3,484,815	3,248,609	4,645,961	826,043	25,170
1923						
<i>To Canadian Smelters—</i>						
Ores.....	569	908,588	823,586	1,361,787	119,206	.....
Concentrates.....	3,819	1,598,092	1,326,137	2,263,579	584,139	.....
<i>To Foreign Smelters—</i>						
Concentrates.....	1,481	504,537	443,819	790,767	5,802	66,512
<i>Total Shipments—</i>						
Total Ores and Concentrates.....	5,869	3,011,217	2,593,542	4,416,133	709,147	66,512

(a) Gross value means value of the metals paid for before deducting transportation and treatment charges, and includes exchange premium received.

(b) Net value is actual amount received by operator.

(c) From North Western Ontario.

Table 250.—Employees, Salaries and Wages in the Silver-Cobalt Mining Industry in Canada, 1922 and 1923

	1922		1923	
	Number	Salaries and wages	Number	Salaries and wages
		\$		\$
<b>SALARIED EMPLOYEES—</b>				
Superintendents and managers.....	30	107,123	40	146,934
Technical employees.....	41	92,506	33	73,445
Clerks and stenographers.....	32	42,528	42	72,637
Total.....	103	242,157	115	293,016
<b>WAGE-EARNERS—</b>				
Mine.....	974	1,290,579	1,054	1,656,722
Mill.....	326		239	
Total.....	1,300	1,290,579	1,293	1,656,722
<b>Grand Total.....</b>	<b>1,403</b>	<b>1,532,736</b>	<b>1,408</b>	<b>1,949,738</b>

Table 251.—Number of Wage-Earners in the Silver-Cobalt Mining Industry in Canada by Months, 1922 and 1923

Month	1922				1923			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Under-ground			Surface	Under-ground		
January.....	236	572	277	1,085	316	669	251	1,236
February.....	249	547	258	1,054	324	673	234	1,231
March.....	290	573	266	1,129	318	696	237	1,251
April.....	298	581	272	1,151	303	672	233	1,208
May.....	327	620	331	1,278	345	672	234	1,251
June.....	327	624	352	1,303	356	693	239	1,288
July.....	321	609	358	1,288	364	710	247	1,321
August.....	319	616	366	1,301	388	699	246	1,333
September.....	323	610	358	1,291	397	692	237	1,326
October.....	338	551	342	1,231	429	667	230	1,326
November.....	341	547	315	1,203	412	745	235	1,392
December.....	306	588	309	1,203	370	734	241	1,345
<b>Average.....</b>	<b>342</b>	<b>632</b>	<b>326</b>	<b>1,300</b>	<b>360</b>	<b>694</b>	<b>239</b>	<b>1,293</b>

Table 252.—Miscellaneous Expenses in the Silver-Cobalt Mining Industry in Canada, 1922 and 1923

	1922	1923
	\$	\$
Producing mines.....	2,207,743	2,132,114
Operating but non-producing.....	63,443	.....
<b>Total.....</b>	<b>2,271,186</b>	<b>2,132,114</b>

### THE NICKEL-COPPER INDUSTRY

The nickel-copper mining, smelting and refining industry, which is carried on almost entirely in the province of Ontario, has long been famous as the world's main source of a very large proportion of the nickel used in industry. The mines and smelters are situated in the vicinity of Sudbury, Ontario, where three companies are engaged in mining and smelting, producing a matte which runs on the average of about 50 per cent nickel and 32 per cent copper the balance consisting of iron and sulphur. The three companies are the Mond Nickel Company,

International Nickel Company of Canada, and the British America Nickel Corporation. The first of these companies has always shipped its matte to Swansea, Wales, for treatment, and during the period it took over a steel plant near Clearfield, Pa., for the purpose of manufacturing nickel in various forms such as seamless and welded nickel tubes and fittings. This company also turns out an alloy known as Mond metal which contains approximately 70 per cent nickel, 2 to 3 per cent of manganese and about 1 per cent of impurities and the remainder copper. The International Nickel Company of Canada operates a large refinery at Port Colborne, Ont., where in 1923 the major portion of matte from this company's smelter was treated, the products made were converter copper, refined and electrolytic nickel, nickel oxide and residues containing gold, silver and metals of the platinum group. The matte of this company exported for treatment at Huntington, W. Va., was all used for the production of monel metal, which contains approximately one-third copper and two-thirds nickel with not more than 3.5 per cent of iron to add tensile strength. The refinery of the British America Nickel Corporation located at Deschenes, Que., where the matte from the smelter at Nickelton is treated electrolytically for the production of electrolytic nickel, electrolytic copper, and the recovery of residues containing gold, silver, and metals of the platinum group.

The industry including mines, smelters and refineries furnished employment to an average of 3,231 workers during the year, to whom \$4,332,544 was paid in wages as against an average of 1,492 in 1922 who received \$2,009,335, an increase of more than 115 per cent in wages and 188 per cent in numbers.

Salaried employees increased in number from 161 in 1922 to 233 in 1923, while the salary pay-roll mounted from \$370,674 to \$531,345.

Miscellaneous expenses which included taxes, head office, travelling, selling, and advertising expenses but excluded the amounts already shown above and also fuel expenses, remained about the same during 1923 as in 1922.

**Table 253.—Capital Employed in the Nickel-Copper Industry in Canada, 1922 and 1923**

	1922	1923
	\$	\$
Buildings, plant machinery and tools:—		
Mines.....	8,082,571	*22,758,935
Smelters.....	14,040,519	14,400,360
Refineries.....	9,202,003	9,578,634
Cost of materials and supplies on hand.....	4,108,969	7,339,709
Cash, trading and operating accounts and bills receivable.....	1,151,035	1,205,280
<b>Total.....</b>	<b>36,585,097</b>	<b>55,282,915</b>

\*Includes cost of lands in 1923.

**Table 254.—Output from Nickel-Copper Mines and Smelters in Canada, 1922 and 1923**

	1922	1923
Ore mined..... Tons	259,569	1,187,355
Ore shipped..... "	259,569	1,168,139
Content of ores, etc., shipped:		
Copper..... Lb.	9,177,306	35,635,726
Nickel..... "	14,127,554	72,855,433
Ore concentrates treated at smelters..... Tons	314,120	1,140,160
Matte produced..... "	17,324	58,084
Content of matte:		
Copper..... Lb.	10,841,647	31,538,710
Nickel..... "	17,355,056	62,057,835
Matte shipped to Canadian refineries..... Tons	10,065	35,612
Matte exported to foreign refineries..... "	19,831	21,450

Table 255.—Output from Nickel-Copper Refineries in Canada, 1922 and 1923

		1922		1923	
		Quantity	Value	Quantity	Value
Matte received.....	Tons	10,065	\$	35,668	\$
Matte treated.....	"	10,340		31,765	
Products made—					
Refined nickel.....	Lb.	11,065,473	3,140,399	(a)23,203,741	3,935,092
Nickel oxide.....	"	2,389,840	389,398	11,377,086	1,658,909
Converter and refined copper.....	"	4,382,922	502,293	14,761,787	2,075,228
Gold.....	Fine ozs	213	4,275	976	19,522
Silver.....	"	12,212	8,016	54,075	34,536
Platinum.....	"	49	4,662	1,210	127,018
Palladium.....	"	59	3,104	1,732	118,902
Iridium and rhodium.....	"	4	170	304	40,957
<b>Total value.....</b>			<b>4,052,317</b>		<b>8,010,164</b>

(a) Electrolytic Nickel and Nickel shot.

Table 256.—Salaried Employees by Classes, and Salaries Paid in the Nickel-Copper Industry in Canada, 1922 and 1923

	At the mines		At the smelters		At the refineries		Total	
	No.	Salaries paid	No.	Salaries paid	No.	Salaries paid	No.	Salaries paid
<b>1922</b>		\$		\$		\$		\$
Superintendents, managers, etc.....	10	40,276	13	69,970	6	44,100	29	154,346
Technical employees—								
Engineers, surveyors, chemists, draughts-	2	5,250	19	45,385	17	22,029	38	72,664
men, etc.....	6	12,535	30	54,868	58	76,261	94	143,664
Clerks, stenographers, etc.....								
<b>Total.....</b>	<b>18</b>	<b>58,061</b>	<b>62</b>	<b>170,223</b>	<b>81</b>	<b>142,390</b>	<b>161</b>	<b>370,674</b>
<b>1923</b>								
Superintendents, managers, etc.....	8	36,500	18	99,113	6	44,122	32	179,735
Technical employees—								
Engineers, surveyors, chemists, draughts-	5	7,851	21	57,114	38	58,668	64	123,633
men, etc.....	10	16,987	46	68,532	81	142,458	137	227,977
Clerks, stenographers, etc.....								
<b>Total.....</b>	<b>23</b>	<b>61,338</b>	<b>85</b>	<b>224,759</b>	<b>125</b>	<b>245,248</b>	<b>233</b>	<b>531,345</b>

Table 257.—Number of Employees by Months and Wages Paid in the Nickel-Copper Industry in Canada, 1922 and 1923

	At the mines			At the smelters	At the refineries	Total
	Surface	Under ground	Total			
1922	No.	No.	No.	No.	No.	No.
January.....	183	308	491	689	593	1,773
February.....	198	358	556	793	602	1,951
March.....	208	389	597	831	606	2,034
April.....	129	150	279	402	70	751
May.....	140	156	296	414	234	944
June.....	149	165	314	446	321	1,081
July.....	164	160	324	460	458	1,242
August.....	177	170	347	513	492	1,352
September.....	195	230	425	687	520	1,632
October.....	191	244	435	667	515	1,617
November.....	205	268	473	668	577	1,718
December.....	226	321	547	701	561	1,809
<b>Total wages 1922.....</b>			<b>\$532,981</b>	<b>\$799,831</b>	<b>\$676,523</b>	<b>\$2,009,335</b>
1923						
January.....	281	486	767	921	612	2,300
February.....	302	488	790	931	627	2,348
March.....	301	564	865	936	586	2,387
April.....	325	499	824	1,077	755	2,656
May.....	329	694	1,023	1,203	913	3,139
June.....	358	737	1,095	1,350	1,009	3,454
July.....	371	738	1,109	1,406	1,079	3,594
August.....	383	725	1,108	1,430	1,134	3,672
September.....	415	713	1,128	1,466	1,143	3,737
October.....	423	821	1,244	1,600	986	3,830
November.....	472	866	1,338	1,547	956	3,841
December.....	501	900	1,401	1,524	888	3,813
<b>Total wages 1923.....</b>			<b>\$1,359,748</b>	<b>\$1,733,654</b>	<b>\$1,239,142</b>	<b>\$4,332,544</b>

Table 258.—Miscellaneous Expenses in the Nickel-Copper Industry in Canada, 1922 and 1923

Industry	1922	1923
	\$	\$
Mines and mills.....	608,809	1,386,605
Smelters and refineries.....	4,015,618	3,281,631
<b>Total.....</b>	<b>4,624,427</b>	<b>4,668,236</b>

## THE SILVER-LEAD-ZINC INDUSTRY

Silver-lead-zinc mining has developed very rapidly in British Columbia during the past three years and the industry has more than regained the flourishing condition achieved during the most prosperous period of the war-time demand for metals. Producing properties in Canada which numbered 57 in 1921 rose to 75 in the following year and in 1923 totalled 84 mines. Of these, 2 were located in Quebec, 1 in Ontario, 6 in Yukon Territory and 75 in British Columbia. In the table showing mine shipments by provinces, a most creditable increase is shown in the net values of all ores shipped, the total of \$6,620,067 for 1923 being more than three times the figure given in 1921 and greater than the net values received during the war even with the augmented prices then obtaining. Due to the successful operation of the new concentrator at Kimberly, built by the Consolidated Mining and Smelting Company at Trail, shipments of zinc ore have fallen while the shipments of concentrates have increased notably. This plant which treats about 2,500 tons of zinc-lead ore per day commenced operating toward the end of August. A feature of the construction of this large plant was that with the exception of the large rock breakers and motors all the machinery required was constructed in the company's shops. Of the total ore shipped from Canadian mines only 12,149 tons, consisting mainly of lead ore, of which 10,472 tons came from the Yukon, was exported to the United States smelters. The important producers in British Columbia and the tonnages mined were as

follows: Sullivan, 489,844 tons; Silversmith, 37,895 tons; Wonderful and Van Roi, 14,413 tons; Standard, 7,200 tons, and Cork-Province, 6,000 tons. The remainder of the properties in British Columbia, of which there were 69 in number produced quantities of ore ranging from 1 to 1,000 tons. In the Yukon the very rich silver-lead deposits were continued in operation, and important shipments were made. The Treadwell Yukon Company and the Keno Hill, Limited, shipped 10,472 tons, of which 86 tons was produced by other small operators. An excerpt from the report of the Gold Commissioner<sup>(1)</sup> at Dawson covering the 1923 season, reads as follows:

*"Lode Mining.*—This class of mining has been largely confined to the silver-lead operations in the Mayo District. In addition to the Keno Hill, Limited, and the Treadwell Yukon Company, Limited, the two largest operating companies in the district, a considerable tonnage of high grade ore was mined by individuals and miners working on leases, and disposed of to one or the other of the large companies on the waterfront at Mayo. The fact that they are able to dispose of the ores mined in the district has greatly encouraged these individual efforts, and has materially assisted in the development of the camp.

The Keno Hill, Limited, have temporarily discontinued work on the original Keno Hill Group, and are now confining their operations to the systematic development of the 'Sadie' and 'Friendship' group adjoining the holdings of the Treadwell Yukon Company, Limited.

The most pretentious piece of development work being carried on in the district is the driving of a three thousand foot tunnel for the Treadwell Yukon Company, Limited, to strike the vein on their property at the six hundred foot level. If this tunnel strikes the ore at that level, as it is confidently expected it will, the plans of the company contemplate the immediate erection of a fifty ton mill to treat the lower grade ores being developed. The tunnel in question will be completed before July 1st, and the mill installed during the coming summer.

The discovery of high grade galena ore on the Right Fork of the Beaver River has resulted in some sixty claims being located in that district during the past few months. From all reports received the indications are very favourable, large quantities of supplies have already been freighted in over the snow, and genuine development work will be carried on there during the coming summer.

In general it may be safely stated that the development of the district taken as a whole, during the past year has been highly satisfactory."

Ontario was represented by one mine, located near Galeita, and owned by the Kingdon Mining, Smelting and Manufacturing Company, which was operated in conjunction with the smelter at the same place. The following statistics while covering employment data, wages and so forth take no account of capital invested in the Ontario property which is included in the chapter on metallurgy. In Quebec province during 1923, three active properties carried on operations and two of these produced and sold concentrates.

Capital actually invested in the industry showed considerable gains during the period, both in British Columbia and the Yukon, where increases of over one million dollars were shown in both provinces. The amount of capital invested in Ontario and Quebec remained fairly stationary. The data on employment statistics and wages paid as set forth in Tables 264 and 265 indicate the improved condition of the industry during 1923 as compared with 1922. Total money expended for officials and other employees advanced from \$1,370,645 in 1922 to \$2,024,752 in the following year. Miscellaneous expenses, the bulk of which was entailed by the larger companies also increased.

Table 259.—Capital Employed in the Silver-Lead-Zinc Mining Industry in Canada, 1922 and 1923

Province	Capital employed as represented by			
	Cost of lands, buildings and equipment	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total
1922				
British Columbia.....	\$ 5,225,858	\$ 94,923	\$ 424,131	\$ 5,744,912
Yukon.....	774,541	87,143	222,384	1,084,064
<b>Canada.....</b>	<b>6,000,399</b>	<b>182,066</b>	<b>646,515</b>	<b>6,828,980</b>
1923				
Quebec.....	150,000	15,000	.....	165,000
British Columbia.....	6,139,780	597,296	113,097	6,850,173
Yukon.....	1,687,401	251,518	249,905	2,188,824
<b>Canada.....</b>	<b>7,977,181</b>	<b>863,814</b>	<b>363,002</b>	<b>9,203,997</b>

<sup>1</sup> Supplied through the courtesy of the Mining Lands and Yukon Branch.

Table 260.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry, 1922 and 1923

Production	Ontario and Quebec	British Columbia	Yukon	Canada
	Tons	Tons	Tons	Tons
1922				
Ore mined.....	36,138	464,084	5,551	505,773
Ore milled.....	36,138	54,144		90,282
Concentrates produced—lead.....	† 1,455	10,116		11,571
“ “ “ zinc.....		4,020		4,020
1923				
Ore mined.....	66,824	561,808	7,866	636,498
Ore milled.....	66,824	260,144		326,968
Concentrates produced—lead.....	5,273	30,929		36,202
“ “ “ zinc.....	4,000	44,476		48,476

† Lead concentrates only.

Table 261.—Products Shipped by Silver-Lead-Zinc Mines in Canada, 1922 and 1923

Location of mines	No. of mines shipping	Product shipped	Quantity shipped	Net value at shipping point	Total metal content as determined by settlement assay			
					Gold	Silver	Lead	Zinc
			tons	\$	ozs.	ozs.	lb.	lb.
1922								
Ontario and Yukon...	3	Lead ore.....	4,160	471,522	.....	951,932	4,419,744	277,054
		Lead concentrates.....	1,455	145,500	.....		2,910,610	.....
		Total.....	5,615	617,022	.....	951,932	7,330,354	277,054
British Columbia....	72	Lead ore.....	14,194	562,183	70	599,862	7,552,793	1,233,901
		Lead concentrates.....	6,423	624,370	234	611,843	6,452,703	.....
		Zinc ore.....	350,504	2,075,144	16	1,312,505	78,303,030	98,057,915
		Zinc concentrates.....	5,592	282,705	26	186,584	47,281	4,918,049
		Dry ore.....	98	12,388	8	19,922	4,264	.....
		Total.....	376,811	3,556,790	354	2,730,716	92,360,071	104,209,865
Total for Canada....	75		382,426	4,173,812	354	3,682,648	99,696,425	104,486,919
1923								
Quebec and Ontario.	3	Lead ore.....						
		Lead concentrates.....	5,273	403,792	667	31,119	6,305,274	.....
		Zinc concentrates.....	613	7,700	.....	3,624	38,080	488,320
		Total.....	5,886	411,492	667	34,743	6,343,354	488,320
British Columbia....	75	Lead ore.....	30,201	1,010,896	134	665,090	15,849,921	3,920,630
		Lead concentrates.....	30,940	2,381,555	244	1,047,907	37,092,272	3,475,553
		Zinc ore.....	234,140	1,215,113	5	785,334	52,831,454	60,964,991
		Zinc concentrates.....	44,476	630,301	60	325,267	4,720,118	34,695,423
		Dry ore.....	684	74,198	29	125,082	59,866	600
		Total.....	340,441	5,312,063	472	2,948,680	110,553,631	103,057,197
Yukon.....	6	Lead ore.....	10,472	896,512	127	2,001,013	7,523,459	1,329,192
Total for Canada....	84		356,799	6,620,067	1,266	4,984,436	124,420,444	104,874,709

Table 262.—Shipments of Lead Ores from Canadian Mines, 1913-1923

Year	Lead ores shipped		Lead content in pounds	Silver content in ounces
	Tons	Value		
		\$		
1913.....	85,978	3,276,812	53,807,570	2,564,155
1914.....	70,207	2,652,802	50,527,130	2,501,820
1915.....	73,752	2,958,394	48,708,005	2,954,175
1916.....	84,516	4,568,500	54,124,628	2,582,952
1917.....	46,799	3,866,862	38,696,116	1,670,064
1918.....	75,256	4,705,573	46,843,602	2,314,542
1919.....	54,508	3,044,839	32,147,989	2,185,376
1920.....	69,493	2,985,848	36,325,507	2,882,178
1921.....	15,259	671,313	9,517,616	989,374
1922.....	27,203	1,803,575	21,335,850	2,163,637
1923.....	76,886	4,692,755	66,770,926	3,745,129



Table 266.—Miscellaneous Expenses in the Silver-Lead-Zinc Mining Industry in Canada, 1922 and 1923

Province	1922	1923
	\$	\$
Quebec, Ontario and Yukon.....	131,862	615,559
British Columbia.....	1,018,733	1,052,373
<b>Canada.....</b>	<b>1,150,595</b>	<b>1,667,932</b>

Table 267.—Destination of Shipments from Silver-Lead-Zinc Mines in Canada, 1922 and 1923

Product shipped	Tons shipped	Net value at shipping point	Total metal content as determined by settlement assay			
			Gold	Silver	Lead	Zinc
			OZS.	OZS.	lb.	lb.
<b>1922</b>		\$				
<i>To Canadian Smelters—</i>						
Lead ore.....	13,642	500,302	52	537,313	6,820,558	1,233,901
Lead concentrates.....	8,230	704,980	218	544,331	8,598,526	.....
Zinc ore.....	350,504	2,075,144	16	1,312,505	78,303,030	98,057,915
Zinc concentrates.....	5,592	282,705	26	186,584	47,281	4,918,049
Dry ore.....	93	12,388	8	19,922	4,264	.....
<b>Total.....</b>	<b>378,066</b>	<b>3,575,519</b>	<b>320</b>	<b>2,600,655</b>	<b>93,773,659</b>	<b>104,209,865</b>
<i>To United States Smelters—</i>						
Lead ore.....	4,713	533,403	18	1,014,481	5,151,979	277,054
Lead concentrates.....	618	64,890	16	67,512	764,787	.....
<b>Total.....</b>	<b>5,331</b>	<b>598,293</b>	<b>34</b>	<b>1,081,993</b>	<b>5,916,766</b>	<b>277,054</b>
<b>1923</b>						
<i>To Canadian Smelters—</i>						
Lead ore.....	30,127	1,007,504	132	661,317	15,804,900	3,920,130
Lead concentrates.....	35,223	2,724,957	244	1,037,857	42,186,967	3,475,553
Zinc ore.....	234,140	1,215,113	5	785,334	52,831,454	60,964,991
Zinc concentrates.....	44,476	630,301	60	325,267	4,720,118	34,695,423
Dry ore.....	684	74,198	29	125,082	59,866	600
<b>Total.....</b>	<b>344,650</b>	<b>5,652,073</b>	<b>470</b>	<b>2,934,857</b>	<b>115,603,305</b>	<b>103,056,697</b>
<i>To United States Smelters—</i>						
Lead ore.....	10,546	899,904	129	2,004,786	7,568,480	1,329,692
Lead concentrates.....	990	60,390	667	41,169	1,210,579	.....
Zinc concentrates.....	613	7,700	.....	3,624	38,080	488,320
<b>Total.....</b>	<b>12,149</b>	<b>967,994</b>	<b>796</b>	<b>2,049,579</b>	<b>8,817,139</b>	<b>1,818,012</b>

## METALLURGICAL WORKS

It was found impossible in several cases to draw any line of demarcation between mining proper and those operations carried on above ground by establishments that give treatment of one kind or another to the crude ore after it is mined, since it has been the custom to consider this preparation for market or for further treatment, as part of the mining operations.

In a number of instances, however, it has been possible to obtain certain statistics regarding smelting and refining plants operated in conjunction with mines, and the present section has been designed to present in a correlated manner the principal data furnished by these concerns and by similar plants operated independently of mines, in which the reduction of ores either by fire or by electricity was carried on for the production of the non-ferrous metals or compounds of them.

In British Columbia with the exception of the copper smelting department of the Consolidated Mining and Smelting Company at Trail, activity was general. In Ontario, the important

feature was the recovery of the nickel-copper industry while two smelters treating the cobalt arsenides of the Cobalt camp were active. The lead smelter at Galetta increased its production by the addition of a unit to the smelting furnaces.

There was also the favourable development and operation of the large silver and gold mills of northern Ontario throughout the entire year 1923 but, while the recovery operations carried on there are metallurgical in character, they have not been included in this section for the reasons already mentioned. The names of the companies and their principal products follow:—

#### BRITISH COLUMBIA

*The Consolidated Mining and Smelting Company of Canada, Ltd.*, Trail, B.C., operating many mines in addition to a large smelter and refineries producing gold, silver, lead, copper, copper sulphate, and zinc;

*The Granby Consolidated Mining, Smelting and Power Company, Ltd.*, Anyox, B.C., operating mines and a copper smelter and producing copper, gold and silver.

#### ONTARIO

*The International Nickel Company of Canada, Ltd.*, Copper Cliff, Ont., operating several mines and a smelter near Copper Cliff, and a refinery for matte at Port Colborne, Ontario, producing nickel and compounds of nickel, copper, monel metal and small amounts of the precious metals such as gold, silver, platinum and others of the platinum group;

*The Mond Nickel Company*, operating mines and a smelter at Coniston, Ontario, but shipping the smelter matte to Wales for refining;

*The British America Nickel Corporation*, operating mines and a smelter near Sudbury, and refining the matte at Deschenes, Que., producing nickel and nickel compounds, copper and some precious metals;

*The Coniagas Reduction Company* operating a smelter at St. Catharines, Ontario, and producing silver bullion, the metals and oxides of cobalt and nickel, metallic arsenic, white arsenic and copper sulphate;

*The Deloro Smelting and Refining Company*, operating at Deloro, Ontario, smelting cobalt ores and producing silver bullion, metals and oxides of cobalt and nickel, white arsenic, the alloy "stellite" and insecticides;

*The Kingdon Mining, Smelting and Manufacturing Company*, Galetta, Ont., producing a pig lead from galena ores;

*The Canadian Zinc Products Company* operated their zinc oxide plant for a short time during 1921, but it was partially destroyed by fire in August of that year, and did not re-open throughout the entire period of 1922 or 1923.

#### NEW BRUNSWICK

*The North American Antimony Smelting Company*, Lake George, producing antimony regulus (idle). The company has been reorganized and is now known as the Antimony Products Corporation.

#### GENERAL NOTES

Smelting and reduction works treating only foreign ores, such as the Electro Tin Syndicate, Brantford, Ontario (idle in 1923); the Shawinigan Electro Metals Co., Shawinigan Falls, P.Q. (idle in 1923), and the Northern Aluminium Co., Shawinigan Falls, P.Q., and all furnaces used in recovering the non-ferrous metals from scrap have been excluded, as their activities have been reviewed in the report on the "Manufactures of the Non-Ferrous Metals."

The groups selected were: The nickel-copper smelting and refining group, comprising three companies which operated three smelting establishments, all in Ontario, and two refineries, one of which was in Ontario and the other in Quebec; the silver-cobalt smelters and refineries, including two companies engaged in treating silver ores from the Cobalt camp; and the copper-lead-zinc smelters and refineries in which three companies were active, two being in British Columbia and one in Ontario.

The capital actually invested in the metallurgical plants of Canada whose operations are reviewed in this section, increased during 1923 by a little more than one million dollars all of which increase was in the cost of materials and supplies on hand, and in quick assets such as

cash or bills receivable. The lands, buildings, plant machinery and tools in which \$48,931,884 was invested in 1922 were reported as representing \$47,737,307 in 1923, a decrease of more than one million dollars.

Employment statistics reflected the progress made. The total number of employees including salaried officials engaged in the smelters rose from 2,841 in 1922 to 3,952 in the following year, while the refinery workers rose from 543 in number to 1,016. Wages and salaries for both smelters and refineries totalled \$5,042,787 in 1922 and \$7,930,236 in 1923.

In the actual operations of the smelters and refineries the greatest activity was, of course, in the nickel-copper group. The quantity of ores treated by the three nickel-copper smelters rose from 314,120 tons in 1922 to 1,140,160 tons in 1923, with a corresponding increase in quantity of matte produced. Matte exported for refining was slightly less in quantity while the amount treated in domestic refineries increased three-fold. The two silver-cobalt smelters operating in 1923 together treated double the quantity handled in 1922. Because of the low price of copper in 1923 which necessitated idleness on the part of the copper department of the Trail smelters, the tonnage of copper ore treated by the copper-lead-zinc group was lower than in 1922. On the other hand, the tonnages of lead and zinc ores treated showed some advance.

In Table 270 sales, and the income therefrom are given.

In the corresponding tables printed in the report for the years 1921 and 1922 only the products made were listed and the items were given a value based wherever possible on the prices obtained from sales made. The method used in the present report differs in that, instead of products made and values thereof, statistics of actual sales and receipts therefrom are available. The net sales in 1923 amounted to \$35,254,048. This figure makes no allowance for the costs to the smelters of ores, etc. treated.

The total quantities and values given do not agree with the data shown as the mineral production of Canada in Part One of this report since a portion of the metal produced in these smelters was recovered from foreign or imported ores treated in Canada, and also because large quantities of metals mentioned in Part One did not pass through these smelters but were recovered either in hydro-metallurgical operations, or in foreign smelters to which they had been shipped for treatment.

It might also be here repeated that the tables on Mineral Production in Part One are based as far as possible on smelter outputs and not sales. These differences should be kept in mind when comparisons are made between the two sets of tables.

**Table 268.—Capital Actually Employed in the Metallurgical Plants of Canada, 1922 and 1923**

Item	1922				1923			
	Lands, buildings, plant, machinery and tools	Materials on hand, supplies finished products ore on dump	Cash trading and operating accounts bills receivable	Total	Lands, buildings, plant, machinery and tools	Materials on hand, supplies finished products ore on dump	Cash, trading, and operating accounts bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nickel-copper smelters and refineries.....	23,242,522	3,736,357	1,151,035	28,129,914	23,978,994	6,929,832	1,205,280	32,114,106
Silver-cobalt smelters.....	1,415,656	227,042	1,125,225	2,767,923	1,442,127	434,620	2,174,806	4,051,553
Copper, lead and zinc smelters and refineries.....	24,273,706	7,094,677	894,331	32,262,714	22,316,186	4,697,724	1,111,362	28,125,272
<b>Total.....</b>	<b>48,931,884</b>	<b>11,058,076</b>	<b>3,170,591</b>	<b>63,160,551</b>	<b>47,737,307</b>	<b>12,062,176</b>	<b>4,491,448</b>	<b>64,290,931</b>

Table 269.—Ores, Concentrates, etc., Treated in Canadian Smelters, 1922 and 1923.

Group	1922	1923
	Tons	Tons
Nickel-Copper—		
Ores treated.....	314,120	1,140,160
Matte produced.....	17,324	58,084
Matte exported for refining.....	29,108	21,450
Matte treated in Canadian refineries.....	10,340	31,765
Silver-Cobalt-Nickel—		
Ores treated.....	252	751
Concentrates treated.....	1,556	2,180
Residues treated.....	2,068	4,794
Copper-Lead-Zinc—		
Copper, ores and concentrates.....	895,691	874,567
Lead ores.....	15,283	39,009
Lead concentrates.....	63,119	62,692
Gold ores (imported).....	10,507	16,716
Zinc residues.....	44,948	57,585
Other ores.....	569	183
Zinc concentrates.....	109,942	111,620
“ ore (imported).....		2,739

Table 270.—Products Sold by the Metallurgical Works in Canada, 1923

Industry and Material	Sold	
	Quantity	Value
		\$
NICKEL-COPPER SMELTERS AND REFINERIES—		
Matte..... tons	21,450	5,645,305
Nickel, nickel oxide and copper.....		7,935,962
Residues containing gold..... fine oz	976	19,522
silver..... “	54,075	34,536
platinum..... “	1,210	127,018
palladium..... “	1,732	118,902
others..... “	304	40,957
Total.....		13,922,202
SILVER-COBALT SMELTERS AND REFINERIES—		
Silver bullion (fine)..... fine oz.	3,093,060	2,004,180
White arsenic (fine)..... lb.	5,158,617	582,785
Cobalt (metal).....		576,880
Cobalt oxide.....		879,529
Other cobalt salts.....		62,019
Mixed oxides.....		189,910
Nickel metal.....		10,075
Nickel oxide.....		9,246
Cleanings and residues..... lb.	496,128	99,023
Matte.....		76,642
Total.....		4,490,239
COPPER-LEAD-ZINC SMELTERS—		
Blister copper..... lb.	31,384,817	4,950,955
Gold..... fine oz.	11,113	232,878
Silver..... “	3,027,237	1,999,799
Lead and zinc..... lb.	162,974,084	9,657,925
Total.....		16,841,557
Total Sales.....		35,254,048

In the following table, it will be observed that a cost price has been given to the ores and concentrates, etc., treated. These amounts were in part based on the actual net values reported by the mine operators as received by them for the ores shipped. In some of these cases no net values of the ores treated were assigned to the mining sections because the mines and smelters were under the same management and the method of bookkeeping as practised by the operators made no provision for the crediting of the mining departments with a loss or gain. Where no information on cost of ores treated by the smelters was available, estimates were made, based on the metal content of the ores, and the costs of mining. As an example, the nickel-copper ores were assigned a value of \$3.00 per ton during 1923 which figure more than covered all items of costs as reported by the three nickel companies. By such calculations it will be readily seen that the purely mining and ore dressing section of the whole industry was credited with the larger percentage of the net returns, to the operators. During 1923

the total expenditures including the estimated cost of ores treated, salaries and wages, fuel, miscellaneous expenses and the cost of chemicals amounted to \$34,463,275, as against \$21,655,300 in 1922 and \$22,600,944 in 1921. The gain by the metallurgical plants during 1923 was found to amount to almost \$800,000. On the other hand by including the net values of shipments from the mining section and deducting total expenditures, the gain to the metallic mining and metallurgical industry totalled \$16,856,457 as already indicated in Table 217 at the beginning of this section.

**Table 271.—Summary of Expenditures in Metallurgical Works in Canada, 1922 and 1923**

Item	1922	1923
	\$	\$
Estimated cost of ores, etc. treated, in silver-cobalt smelters.....	1,070,000	2,000,000
Estimated cost of ores, etc., treated, in nickel-copper smelters.....	1,889,000	3,420,500
Estimated cost of ores etc., treated, in copper, lead and zinc smelters.....	4,213,000	9,418,585
Total salaries and wages.....	5,042,787	7,930,236
Cost of chemicals used.....	*200,000	†
Cost of fuel.....	1,031,572	15,221,278
Miscellaneous expenses.....	8,229,941	6,472,676
<b>Total expenditures.....</b>	<b>21,655,300</b>	<b>34,463,275</b>

\*Estimated—Data not collected in 1922.

†Included with miscellaneous expenses.

‡Includes \$1,164,444 expended for electric power.

**Table 272.—Employees, Salaries and Wages in the Metallurgical Works in Canada, 1922 and 1923**

Group	1922				1923			
	On smelter pay-roll		On refinery pay-roll		On smelter pay-roll		On refinery pay-roll	
	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages
		\$		\$		\$		\$
<b>Nickel-Copper Smelters and Re- fineries—</b>								
Salaried employees.....	62	170,223	81	142,390	85	224,759	125	245,248
Wage-earners.....	605	799,831	462	676,523	1,283	1,733,654	891	1,239,142
<b>Silver-Cobalt-Nickel Smelters and Refineries Combined—</b>								
Salaried employees.....	45	95,317			56	147,788		
Wage-earners.....	220	187,193			481	475,394		
<b>Copper-Lead-Zinc Smelters and Re- fineries—</b>								
Salaried employees.....	176	40,137			223	565,649		
Wage-earners.....	1,733	2,570,173			1,824	3,298,602		
<b>All the Metallurgical Works—</b>								
Superintendents.....	55	247,287	6	44,100	72	335,419	6	44,122
Technical employees: engineers, chemists, draughtsmen, etc....	104	215,110	17	22,029	126	316,403	33	58,668
Clerks, stenographers, etc.....	124	204,280	58	76,261	166	286,374	81	142,458
Total—Salaried employees.....	283	666,677	81	142,390	364	938,196	125	245,248
Wage-earners.....	2,558	3,557,197	462	676,523	3,588	5,507,650	891	1,239,142
<b>Grand total.....</b>	<b>2,841</b>	<b>4,223,874</b>	<b>543</b>	<b>818,913</b>	<b>3,952</b>	<b>6,445,846</b>	<b>1,016</b>	<b>1,484,390</b>

Table 273.—Number of Wages-Earners in the Metallurgical Works in Canada, by Months, 1922 and 1923.

Month	1922				1923			
	Nickel Copper smelters and refineries	Silver- Cobalt- Nickel smelters and refineries	Copper- Lead-Zinc smelters and refineries	Total	Nickel- Copper smelters and refineries	Silver- Cobalt- Nickel smelters and refineries	Copper- Lead-Zinc smelters and refineries	Total
January.....	1,282	155	1,605	3,043	1,533	378	1,735	3,646
February.....	1,395	126	1,652	3,173	1,558	394	1,710	3,662
March.....	1,437	116	1,787	3,340	1,522	393	1,798	3,713
April.....	472	128	1,723	2,323	1,832	426	1,845	4,103
May.....	648	150	1,742	2,540	2,116	446	1,817	4,379
June.....	767	189	1,710	2,666	2,359	548	1,845	4,752
July.....	918	183	1,725	2,826	2,485	527	1,889	4,901
August.....	1,005	208	1,755	2,968	2,564	554	1,969	5,087
September.....	1,207	255	1,765	3,227	2,609	507	1,828	4,944
October.....	1,182	262	1,728	3,172	2,586	545	1,898	5,029
November.....	1,245	288	1,745	3,278	2,503	577	1,825	4,905
December.....	1,262	283	1,756	3,301	2,412	476	1,727	4,615
Average.....	1,067	220	1,733	3,020	2,174	481	1,824	4,479

Table 274.—Miscellaneous Expenses Chargeable to Smelting and Refining Operations in Canada, 1922 and 1923

	1922	1923
Nickel-Copper smelters and refineries.....	\$ 4,015,618	\$ 3,281,631
Silver-Cobalt smelters and refineries.....	165,189	850,264
Copper-Lead-Zinc smelters and refineries.....	4,049,134	2,340,781
Total.....	8,229,941	6,472,676

## NON-METALLIC MINERAL INDUSTRIES

## ASBESTOS

The eastern townships area in the Province of Quebec furnishes about 85 per cent of the world's production of asbestos. Rhodesia, the second producer, markets only the longer fibre stocks, and is therefore an important competitor, as Canadian mines ship both long and short fibre. The Union of South Africa and Russia have also become more important sources of supply, particularly to European markets; several other countries produce asbestos, but in less amounts.

Asbestos, owing to its fibrous structure and to the fact that it will not burn, finds many uses as a fireproofing material, particularly in felts, sheets, theatre drop-curtains, mitts, etc., and also as a principal component of roofings, shingles, pipe-coverings, brake linings and wall board, to mention only a few of the better-known uses. In the 1921 issue of this report, there was a description of the method used in grading asbestos in the Quebec mills.

The industry in Canada was represented in 1923 by 14 firms operating 16 mines. The amount of capital employed, comprising the value of lands, buildings, plant equipment, cost of materials and supplies on hand at the end of the year, and working capital including cash balances and bills receivable was \$42,715,557, a decrease of \$1,281,695 from the total reported for the preceding year.

Employment was furnished to 3,165 persons including 144 salaried employees and the total disbursements in salaries and wages amounted to \$3,607,178. The peak of employment was in September, when 3,175 men were on the rolls.

United States asbestos operators reported a slight increase in production in 1923. The Rhodesian output in 1923 increased approximately 6,000 long tons over the 1922 totals, while in the Union of South Africa the quantity of asbestos produced advanced 91 per cent.

Table 275.—Principal Statistics of the Asbestos Industry in Canada, 1920-1923

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	17	21,839,090	3,776	4,765,305	395,976	5,420,559	14,792,201
1921.....	15	41,357,161	2,694	2,657,425	318,633	2,713,440	4,906,230
1922.....	12	43,997,252	2,572	2,581,644	265,962	2,704,462	5,552,723
1923.....	14	42,715,557	3,165	3,607,178	920,826	2,524,610	7,522,506

Table 276.—Capital Employed in the Asbestos Industry in Canada, 1922 and 1923

	1922	1923
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, plant machinery and tools.....	37,291,835	36,234,918
Cost of supplies and stock on hand.....	2,717,312	2,965,687
Cash, trading and operating accounts and bills receivable.....	3,988,105	3,514,952
<b>Total.....</b>	<b>43,997,252</b>	<b>42,715,557</b>

Table 277.—Employees, Salaries and Wages in the Asbestos Industry in Canada, 1922 and 1923

	1922				1923			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES:—								
Salaried officers of corporation.....	22	1	23	157,840	44		44	194,522
Superintendents and managers.....	27		27	87,832				
Technical employees, engineers, etc.....	21		21	42,739	24		24	52,917
Clerks and stenographers.....	60	14	83	105,494	67	9	76	106,123
Total.....	139	15	154	393,905	135	9	144	353,562
WAGE-EARNERS.—								
Mine.....	1,613		1,613	1,537,805	1,651		1,651	3,253,616
Mill.....	805		805	649,934	1,370		1,370	
Total.....	2,418		2,418	2,187,739	3,021		3,021	3,253,616
Grand Total.....	2,557	15	2,572	2,581,644	3,156	9	3,165	3,607,178

Table 278.—Number of Wage-earners in the Asbestos Industry in Canada by Months, 1922 and 1923

Month	1922		1923		Month	1922		1923	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
January.....	1,023	529	1,325	1,174	July.....	1,821	847	1,671	1,384
February.....	1,076	547	1,405	1,084	August.....	1,935	852	1,637	1,402
March.....	1,193	596	1,386	1,152	September.....	1,890	871	1,675	1,500
April.....	1,141	582	1,627	1,240	October.....	1,681	834	1,674	1,494
May.....	1,345	714	1,672	1,315	November.....	1,663	852	1,443	1,394
June.....	1,569	807	1,694	1,457	December.....	1,758	856	1,458	1,386

Average for 1922.....	2,418
Average for 1923.....	3,021

Table 279.—Monthly Average Prices of Asbestos by Grades, 1922 and 1923

(Price per short ton)  
(Computed from quotations in the *Engineering and Mining Journal-Press*)

Month	Crude No. 1	Crude No. 2	Spinning fibres	Magnesia and compressed sheet fibres	Shingle stock	Paper stock	Cement stock	Floats stock
1922	\$	\$	\$	\$	\$	\$	\$	\$
January.....	1,250	725	312	200	115	55	20	8
February.....	1,100	625	250	155	105	50	15	9
March.....	900	625	250	137	95	45	15	8
April.....	900	625	250	137	95	45	15	8
May.....	825	450	187	125	85	40	16	7
June.....	1,050	525	300	125	107	45	25	15
July.....	888	525	269	125	100	41	20	12
August.....	725	400	237	125	82	31	15	8
September.....	725	400	238	125	82	31	15	8
October.....	700	350	238	137	75	34	15	9
November.....	650	337	238	187	75	32	16	10
December.....	675	375	238	150	75	37	13	9
Average.....	867	499	252	144	98	40	17	9
1923								
January.....	675	375	220	150	75	38	18	10
February.....	500	300	200	150	70	35	18	10
March.....	500	292	178	133	73	37	21	11
April.....	500	288	168	125	75	39	23	12
May.....	500	288	168	125	75	39	23	12
June.....	500	288	168	125	73	39	19	11
July.....	500	275	175	125	75	38	23	10
August.....	453	275	184	125	62	39	19	10
September.....	438	275	222	115	58	37	23	11
October.....	425	275	138	93	56	35	19	10
November.....	397	225	113	75	58	35	19	9
December.....	397	225	113	75	57	35	19	9
Average.....	462	262	170	118	67	34	20	10

## COAL

Canada's coal reserves are estimated to constitute more than 16 per cent of the world's known available supply and most of these deposits are located in the western provinces although coal of good quality has been mined in the maritime provinces for a great many years, and it is probable that operations in that field will be continued for many years to come.

In 1923, there were 507 coal mines operated in Canada, of which 356 were in Alberta, 61 in Saskatchewan, 56 in Nova Scotia, 17 in New Brunswick, 16 in British Columbia, and 1 in the Yukon.

The total capital employed by these mines amounted to \$143,447,448, of which 58.1 million dollars was invested in Nova Scotia mines; 51.6 million dollars in Alberta mines and 28.4 million dollars in British Columbia properties.

Salaried employees to the number of 1,746 were employed in 1923, and salaries paid amounted to \$3,893,722. There was an increase both in the number of salaried employees and in the salaries paid as compared with the previous year, the number of such employees on the rolls in 1922 being 1,742 and the amount paid in salaries, \$3,777,626.

The average number of wage-earners engaged in the coal-mining industry in Canada (exclusive of salaried employees) remained about normal throughout the year, the peak of employment being in January when 33,799 men were employed. The average number employed throughout the year was 30,300.

By provinces, Nova Scotia was easily the leader with an average of 13,385 employees for the year and a maximum of 13,692 employed in March. Alberta coal mines furnished employment on the average to 9,917 men during the year, the maximum employment being recorded in January when 12,384 names were on the rolls. Table 282 shows the average number of employees in the coal mines of Canada by provinces for each month and Table 283 shows for 1923 the number of employees by classes and by provinces.

Closely related in point of interest to the number of employees are the data concerning the number of days' work done and the wages paid. Of the 30,300 employees, 7,576 worked on the surface and 22,724 were employed underground. Surface men worked on the average 279 days during the year as compared with 259 days in 1922 and underground employees worked 241 days on the average as compared with 219 days in 1922. Twenty-one more days' work was done on the average by all employees in the coal mines in 1923 than in 1922, the total for the year being 250 days. Earnings per man-day were \$5.57 as compared with \$5.18 in the previous year and the total wages paid amounted to \$42,321,990 or approximately seven million dollars more than the total of \$35,773,001 paid in 1922.

**Table 280.—Capital Employed in the Coal Mines of Canada, as at December 15, 1923**

—	Nova Scotia	New Brunswick	Saskat- chewan	Alberta	British Columbia	Yukon	Canada
Capital employed as represented by—	\$	\$	\$	\$	\$	\$	\$
Value of buildings, plant, machinery and tools.....	51,787,431	1,054,886	3,091,982	44,408,155	25,533,027	202,500	126,077,981
Cost of supplies on hand and coal on bank.....	3,484,754	66,728	47,367	1,214,629	649,852	.....	5,463,330
Cash, trading and operating accounts and bills receivable....	2,827,136	572,524	313,737	6,020,628	2,171,612	500	11,906,137
<b>Total.....</b>	<b>58,099,321</b>	<b>1,694,138</b>	<b>3,453,086</b>	<b>51,643,412</b>	<b>28,354,491</b>	<b>203,000</b>	<b>143,447,448</b>

Table 281.—Salaried Employees and Salaries Paid on Coal Mine Staffs in Canada, by Provinces, 1923

		Nova Scotia	New Brunswick	Saskat- chewan	Alberta	British Columbia and Yukon	Canada
Salaried officers of the corpora- tion.....	No. 47 Salary \$ 158,926	6 13,200	3 11,200	98 345,299	23 144,085	177 672,710	
General superintendents and man- agers.....	No. 163 Salary \$ 421,605	11 34,759	14 32,930	264 739,966	39 149,896	491 1,379,156	
Technical experts, accountants, etc.....	No. 113 Salary \$ 196,468	2 2,700	6 7,465	105 211,912	94 239,418	320 657,963	
Clerk, stenographers and sales- men.....	No. 411 Salary \$ 641,536	12 16,109	14 17,416	208 320,865	113 187,967	758 1,183,893	
<b>Total.....</b>	<b>No. 734 Salary \$ 1,418,535</b>	<b>31 66,768</b>	<b>37 69,011</b>	<b>675 1,618,042</b>	<b>269 721,366</b>	<b>1,746 3,893,722</b>	

Table 282.—Number of Employees in the Coal Mines of Canada by Months and by Provinces, 1922 and 1923

Month	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia and Yukon	Canada
January.....	1922 10,988 1923 13,575	642 634	589 619	11,744 12,384	6,525 6,587	30,488 33,799
February.....	1922 17,951 1923 13,449	623 657	555 589	11,022 11,544	6,588 6,534	36,739 32,773
March.....	1922 23,161 1923 13,692	649 646	487 546	9,871 10,083	6,514 6,300	40,682 31,267
April.....	1922 12,314 1923 13,580	526 668	383 432	3,295 8,624	4,996 6,074	21,514 29,378
May.....	1922 12,733 1923 13,569	555 598	338 371	3,518 7,821	5,083 5,627	22,227 27,986
June.....	1922 12,271 1923 13,487	586 615	342 360	3,679 8,133	5,033 5,443	21,911 28,043
July.....	1922 12,870 1923 12,588	580 628	342 350	3,739 8,450	5,170 5,425	22,701 27,441
August.....	1922 13,087 1923 13,255	619 624	325 361	8,075 9,084	6,579 5,586	28,685 28,910
September.....	1922 12,973 1923 13,393	647 553	388 402	11,700 9,686	6,810 5,649	32,513 29,683
October.....	1922 13,253 1923 13,516	650 554	534 599	13,158 10,693	6,746 5,696	34,341 31,058
November.....	1922 13,679 1923 13,209	651 565	642 748	13,383 11,203	6,815 5,819	35,170 31,544
December.....	1922 13,527 1923 13,318	593 611	599 692	12,604 11,310	6,855 5,825	34,178 31,756
Average.....	1922 14,068 1923 13,385	611 612	460 505	8,815 9,917	6,142 5,881	30,096 30,300

Table 283.—Number of Employees, in the Coal Mines of Canada, by Classes and by Provinces, 1923

Classification	Province					Canada		
	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia and Yukon	Surface	Under-ground	Total
<b>SURFACE—</b>								
Administration.....	100	11	11	138	33	242	51	293
Foremen and clerks.....	184	20	18	245	136	550	23	603
Screenmen and loaders.....	662	30	28	612	185	1,514	3	1,517
<b>UNDERGROUND—</b>								
Officials.....	447	4	8	313	182	16	938	954
Hand cutters and helpers.....	1,851	422	266	2,755	2,061	66	7,289	7,355
Machine cutters.....	1,422		5	393	46		1,866	1,866
Machine loaders and helpers.....	1,604	1	11	1,258	54	2	2,926	2,928
Horse haulage employees.....	829	5	45	802	431	38	2,074	2,112
<b>Mechanical haulage employees.....</b>	<b>1,541</b>		<b>9</b>	<b>398</b>	<b>418</b>	<b>11</b>	<b>2,295</b>	<b>2,366</b>
Ventilation employees.....	422			124	68	70	604	614
Roadmakers.....	292		11	228	93	4	620	624
Timbermen.....	670	15	13	395	201	22	1,272	1,294
Pumpmen.....	160	6	10	62	38	12	264	276
<b>MISCELLANEOUS—</b>								
Enginemen.....	252	14	11	185	85	533	14	547
Firemen.....	262	3	12	154	69	500		500
Machinists.....	278	2	3	99	93	468	7	475
Carpenters and masons.....	148	4	6	99	97	353	1	354
Other mechanics.....	254	1	3	173	165	418	178	596
All other white employees.....	2,007	74	35	1,484	837	2,416	2,021	4,437
Japanese.....					68	5	63	68
Chinese.....					519	306	213	519
Indians.....					2		2	2
<b>Total.....</b>	<b>13,385</b>	<b>612</b>	<b>506</b>	<b>9,917</b>	<b>5,881</b>	<b>7,576</b>	<b>22,724</b>	<b>30,300</b>

Table 284.—Number of Employees, Work Done by Months, and Wages Paid in the Coal Mines of Canada, 1923

Month	Number of employees			Days' work done			Total wages
	Surface	Under-ground	Total	Surface	Under-ground	Total	
January.....	8,580	25,219	33,799	202,944	543,255	746,199	Monthly Records not available
February.....	8,352	24,421	32,773	217,689	640,577	858,266	
March.....	7,908	23,359	31,267	177,497	464,108	641,605	
April.....	7,428	21,950	29,378	171,073	451,222	622,295	
May.....	7,171	20,815	27,986	159,907	397,379	557,286	
June.....	7,157	20,886	28,043	183,237	434,952	618,189	
July.....	7,150	20,291	27,441	149,672	304,223	453,895	
August.....	7,213	21,697	28,910	184,594	495,706	680,300	
September.....	7,290	22,393	29,683	160,003	417,409	577,412	
October.....	7,617	23,441	31,058	183,733	476,471	660,204	
November.....	7,691	23,853	31,544	171,113	461,342	632,455	
December.....	7,387	24,369	31,756	151,969	394,395	546,364	
<b>Total.....</b>				<b>2,113,431</b>	<b>5,481,039</b>	<b>7,594,470</b>	<b>\$ 42,321,990</b>
<b>Average.....</b>	<b>7,576</b>	<b>22,724</b>	<b>30,300</b>	<b>279 days per year</b>	<b>241 days per year</b>	<b>250 days per year</b>	<b>\$ 5.57 per day</b>

Table 285.—Power Employed in the Coal Mines of Canada, by Provinces, 1923

Class	Nova Scotia		New Brunswick		Saskatchewan		Alberta		British Columbia		Canada	
	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated
Stationary engines (including those used for hoisting, pumping, etc.):—												
Steam engines and turbines.....	237	71,659	15	522	34	1,541	315	34,501	108	19,534	709	127,757
Gas engines.....	2	10			2	9	30	156			34	175
Oil and gasoline engines.....	1	16			1	3	17	92			19	111
Hydraulic turbines or water wheels.....									2	12,000	2	12,000
Electric motors:—												
Operated by power generated by the establishment	329	24,660	8	160	26	641	232	7,983	126	3,761	721	37,210
Operated by purchased power.....	49	1,439			2	13	212	8,139			263	9,591
Boilers installed.....	102	B.H.P. 20,715	7	B.H.P. 505	11	B.H.P. 950	195	B.H.P. 24,298	88	B.H.P. 13,128	403	B.H.P. 59,596
Electric power used during the year—												
Quantity in Kilowatt-hours.....		44,581,253		1,080,000		36,257		12,010,646		19,681,180		77,389,336
Value.....\$		757,158		32,714		735		231,161		325,575		1,347,343

Table 286.—Miscellaneous Coal Mine Operating Expenses by Provinces, 1922 and 1923

Province	1922	1923
Nova Scotia.....	\$ 7,935,607	\$ 9,583,850
New Brunswick.....	300,499	276,172
Saskatchewan.....	107,313	106,558
Alberta.....	6,239,290	6,692,295
British Columbia.....	2,752,325	2,750,338
<b>Canada.....</b>	<b>17,435,034</b>	<b>19,409,213</b>

## FELDSPAR

The first record of production in the feldspar industry in Canada dates back to about the year 1890. The production during that year was approximately 700 tons and since that date the records show an increase until in 1920, nearly 38,000 tons was produced.

The initial development work in this industry was made on deposits located in Templeton and Hull townships, in the province of Quebec. In the townships of Bedford and Portland, Ontario, near Bedford and Verona, development work was started on large feldspar deposits in the year 1900. The activities of these Ontario feldspar properties during the next few years, owing to their proximity to the American market (potteries located in New Jersey), were responsible for the almost complete cessation of work on Quebec deposits. A small quantity of high-grade dental spar has been produced from the Villeneuve quarry in Portland township, Quebec, for a number of years.

Plants for the fine-grinding of feldspar in Canada are located at Kingston, Toronto and Oshawa; the first two establishments were operated during 1923 producing about 2,200 tons of ground spar. The grinding capacity of these two plants is approximately 7,500 tons per annum.

Although feldspar occurs in many deposits throughout Canada, operations in this industry in 1923 were confined to the provinces of Ontario and Quebec. With the exception of some 3,000 tons used for domestic purposes, the entire Canadian output was shipped to United States grinding plants in the form of crude spar for use in the ceramic industry.

Twenty-five firms reported operations in 1923, comprising 7 in Quebec and 18 in the province of Ontario.

Table 287.—Principal Statistics of the Feldspar Industry in Canada, 1920-1923.

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	20	(*)	277	152,379	(*)	(*)	280,895
1921.....	23	484,633	143	146,776	4,237	55,628	230,754
1922.....	25	388,310	225	127,182	5,231	60,829	248,402
1923.....	25	948,973	298	193,001	13,965	55,542	237,601

(\*) Data not available.

Table 288.—Capital Employed in the Feldspar Industry in Canada, 1922 and 1923

	1922	1923
Capital employed as represented by:	\$	\$
Cost of lands, buildings, plant, machinery and tools.....	336,507	817,047
Cost of supplies and stock on hand.....	15,530	35,418
Cash, trading and operating accounts and bills receivable.....	36,273	16,508
<b>Total.....</b>	<b>388,310</b>	<b>948,973</b>

Table 289.—Employees, Salaries and Wages in the Feldspar Industry in Canada, 1922 and 1923

Year	Number			Salaries and wages
	Male	Female	Total	
Salaried employees.....				\$
1922.....	11	1	12	17,252
1923.....	16	1	17	23,973
Wage-earners.....				
1922.....	213	.....	213	109,930
1923.....	281	.....	281	169,028
<b>Total.....</b>				
1922.....	224	1	225	127,182
1923.....	297	1	298	193,001

Table 290.—Number of Wage-earners in the Feldspar Industry in Canada, by Months, 1922 and 1923

Month	Number		Month	Number	
	1922	1923		1922	1923
January.....	179	199	July.....	130	242
February.....	146	230	August.....	148	282
March.....	152	214	September.....	128	249
April.....	101	186	October.....	188	239
May.....	128	210	November.....	209	238
June.....	133	276	December.....	224	182

Average for 1922..... 213  
 Average for 1923..... 281

## GYPSUM

The first record of the production of gypsum in Canada shows that in 1822 minor operations, consisting of the extraction of a few tons of this commodity for use as fertilizer, were conducted on a bed of gypsum near Paris, Ontario. The first mill for manufacturing gypsum was erected in 1823. Since that date operations in this district have been carried on almost continuously. At the present time the Ontario Gypsum Company, operating at Lythmore and Caledonia is the only producer.

Prior to 1833, activities in the gypsum industry in Nova Scotia consisted principally of minor operations carried on by individual producers. The crude material was shipped to mills located in the United States. Several attempts were made by local producers to work up the crude rock, but these were not successful owing to the almost total dependence on the American market. When the United States duty was made prohibitive all local milling operations ceased. During 1923, two mills were in operation in this province, one situated at Iona and the other at Windsor.

The centre of activities in the gypsum industry in New Brunswick is near Hillsborough, Albert County. Operations have been carried on in this district since 1847. In 1854 there was a change in the ownership of the quarries, and shortly after this date a plaster mill was erected to supply both local and American consumers. At the present time two companies are carrying on extensive operations in this district.

Developments in the gypsum industry in Manitoba are of comparatively recent date, the year 1901 marking the first active intensive work on deposits in the province. The Manitoba Union Mining Company in that year erected a crushing and calcining mill at the head of Portage Bay on Lake Manitoba.

The principal gypsum deposits operated in Canada during 1923 were located in the following centres: Hants and Victoria counties, Nova Scotia; Albert county, New Brunswick; Haldimand county, Ontario; Gypsumville, Manitoba; and in the Lillooet District, British Columbia.

Of the eleven firms producing gypsum in the Maritime provinces, five were controlled by American capital. The output of these five mines was exported in the raw form to the United States, for treatment in the manufacturing plants owned by the same interests. The output from the other mines was quarried and calcined principally for consumption in Canada.

In Ontario and Manitoba the raw gypsum was used mainly in the manufacture of cement, wall plaster, wall-board, fire-proof tile and blocks, and plaster of paris. The British Columbia product was sold as land plaster for agricultural purposes.

Comparative figures for the capital employed by operating gypsum companies in 1922 and 1923 are shown in the following table. Owing to the fact that there was only one operator in Ontario, one in Manitoba, and two in British Columbia, statistics regarding the companies in these provinces have been combined.

**Table 291.—Principal Statistics of the Gypsum Industry in Canada, 1920-1923**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	11	*	1,016	955,602	*	*	1,893,991
1921.....	11	3,849,776	1,039	774,551	118,554	565,839	1,785,538
1922.....	13	4,092,090	1,055	909,072	127,246	436,705	2,160,898
1923.....	15	4,249,628	1,225	1,017,556	190,906	552,990	2,243,100

\*Data not available.

**Table 292.—Capital Employed in the Gypsum Industry in Canada by Provinces, 1922 and 1923**

	1922				1923			
	Nova Scotia	New Brunswick	Ontario, Manitoba and British Columbia	Canada	Nova Scotia	New Brunswick	Ontario, Manitoba and British Columbia	Canada
Capital employed as represented by—	\$	\$	\$	\$	\$	\$	\$	\$
Cost of lands, buildings, plant machinery and tools.....	1,495,717	268,100	1,317,177	3,080,994	1,423,491	465,461	1,283,554	3,172,506
Cost of all materials and supplies on hand.....	109,909	60,778	157,140	327,827	131,507	97,088	145,609	374,204
Cash, trading and operating accounts and bills receivable.....	420,548	3,903	258,818	683,269	406,225	36,942	259,751	702,918
<b>Total.....</b>	<b>2,026,174</b>	<b>332,781</b>	<b>1,733,135</b>	<b>4,092,090</b>	<b>1,961,223</b>	<b>599,491</b>	<b>1,688,914</b>	<b>4,249,628</b>

Table 293.—Employees, Salaries and Wages in the Gypsum Industry in Canada, 1922 and 1923

	1922			Salaries and wages	1923			Salaries and wages
	Number				Number			
	Male	Female	Total		Male	Female	Total	
<b>SALARIED EMPLOYEES—</b>				\$				\$
Salaried officers of corporation...	8		8	41,059	19	1	20	53,097
Superintendents, managers, etc...	21	1	22	50,170				
Technical employees, engineers, etc.....	9		9	16,825	15		15	30,883
Clerks, stenographers, etc.....	7	6	13	16,204	14	8	22	27,093
Total.....	45	7	52	124,258	48	9	57	111,073
<b>WAGE-EARNERS—</b>								
Mine.....	723		723	518,268	805		805	906,483
Mill.....	280		280	266,546	363		363	
Total.....	1,003		1,003	784,814	1,168		1,168	906,483
<b>Grand total.....</b>	<b>1,048</b>	<b>7</b>	<b>1,055</b>	<b>909,072</b>	<b>1,216</b>	<b>9</b>	<b>1,225</b>	<b>1,017,556</b>

Table 294.—Average Number of Employees in the Gypsum Industry in Canada by Provinces, 1923

Months	Nova Scotia		New Brunswick		Ontario		Manitoba		Canada	
	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill
January.....	403	43	100	118	71	69	19	37	593	267
February.....	320	48	100	140	72	71	6	58	498	317
March.....	361	46	120	127	74	69	26	62	581	304
April.....	421	47	135	132	65	67	20	74	641	320
May.....	563	52	175	130	109	83	23	74	870	339
June.....	612	63	175	127	105	93	43	46	935	329
July.....	625	88	200	137	84	82	46	60	955	367
August.....	615	102	203	135	92	81	22	61	932	379
September.....	653	119	200	120	88	77	18	59	959	375
October.....	574	116	180	120	91	79	17	51	892	366
November.....	524	60	177	112	87	77	18	47	806	296
December.....	459	46	100	122	83	69	3	49	645	286
<b>Average.....</b>	<b>526</b>	<b>102</b>	<b>172</b>	<b>127</b>	<b>85</b>	<b>77</b>	<b>22</b>	<b>57</b>	<b>805</b>	<b>363</b>

## MICA

Increased activity noted in the mica industry in Canada during 1922, continued throughout 1923. Large quantities of scrap mica were shipped to the United States to be ground for use in the manufacture of prepared roofings. According to a survey made in 1922, the consumption of mica by Canadian industries in that year, was as follows: roofing materials, 359 tons; wall paper, 200 tons; electrical goods 31 tons; and rubber, 22 tons.

Important deposits of mica in Canada are located in the counties of Hull and Labelle in Quebec, and Lanark, Leeds and Frontenac in Ontario. The product of these mines, in the main part, is shipped first to mica trimming shops, conveniently located, where it is either rough-cobbed or split and trimmed prior to exportation to the United States or Great Britain.

Thirty-three operators in Canada reported shipments of mica during 1923. Of this number 17 were in Quebec, and 16 in Ontario.

Statistics relating to the extensive mica-trimming shops in Ontario and Quebec have not been included in this report, but have been treated under a separate heading in the report on "Manufactures of Non-Metallic Minerals."

Table 295.—Principal Statistics of the Mica Industry in Canada, 1920-1923

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	20	(a)	186	145,247	(a)	(a)	376,022
1921.....	20	576,237	104	74,432	4,354	19,743	70,063
1922.....	20	441,802	147	64,641	1,807	45,825	152,263
1923.....	33	223,650	219	112,469	4,772	60,216	326,974

(a) Data not available.

Table 296.—Capital Employed in the Mica Mining Industry in Canada by Provinces, 1922 and 1923

	1922			1923		
	Quebec	Ontario	Canada	Quebec	Ontario	Canada
	\$	\$	\$	\$	\$	\$
Capital employed as represented by—						
Cost of lands, buildings, plant machinery and tools.....	41,401	52,183	93,584	49,100	25,676	74,776
Cost of all materials and supplies on hand.....	22,911	271,844	294,755	20,847	46,652	67,499
Cash, trading and operating accounts and bills receivable.....	40,610	12,853	53,463	43,740	37,635	81,375
<b>Total.....</b>	<b>104,922</b>	<b>336,880</b>	<b>441,802</b>	<b>113,687</b>	<b>109,963</b>	<b>223,650</b>

Table 297.—Number of Wage-Earners, by Months, and Wages Paid in the Mica Industry in Canada, 1922 and 1923

Month	Number		Month	Number <sup>a</sup>	
	1922	1923		1922	1923
January.....	73	133	July.....	115	223
February.....	73	141	August.....	120	249
March.....	72	150	September.....	149	252
April.....	85	153	October.....	165	232
May.....	104	204	November.....	179	230
June.....	121	224	December.....	146	210
Average for 1922.....					134
1923.....					212
Total wages paid in 1922.....				\$	51,693
Total wages paid in 1923.....				\$	103,022

## NATURAL GAS

No records are available prior to 1892, as to the production of natural gas in Canada. An estimate of the value of gas produced during that year placed the total at \$150,000.

The extensive developments of the oilfields in Ontario made available for consumption large quantities of natural gas. From 1892 to 1902 inclusive, Ontario was the only contributor of this commodity. In 1903, the first production from other provinces was recorded. The value of natural gas produced during 1903 was approximately \$202,000 and from that year onward there was an annual increase in production until in 1917, the grand total value was \$5,045,298. From that date until 1923, considerable decreases in valuation were recorded.

A summary of the natural gas industry in Ontario during 1923 is provided in the following excerpt from the report issued by Col. R. B. Harkness, Commissioner of Gas for Ontario:—

"The decline in production in 1923 reflects the natural decline in the rock pressure of the several fields although the upward trend in the prices has its effect on the quantity consumed. The conservation policy put into effect in the year 1918 is being maintained. Special effort was made during the year to find a new supply of gas in the Trenton limestone in Essex, Kent and Lambton counties. For two years

only dry wells had been found but on November 1st, 1923, the drillers were rewarded by a gusher estimated at 200 barrels of oil per day and 200 M. cubic feet of gas. This well is located in the east of Romney township on the shore of Lake Erie. Great excitement followed but the late season made it imperative that new drilling be postponed until 1924. The Haldimand-Norfolk gas field is being slowly extended but no spectacular wells have been found. The limits of the Welland gas field have apparently been reached, and it has been thoroughly tested to the pre-Cambrian. A small gas and oil field, seven miles east of the city of Sarnia, is likely to be utilized for making carbon black as it is too small to operate as a gas field."

The producing fields in Alberta, during 1923 were, the Medicine Hat; Bow Island (about 40 miles west of Medicine Hat); and the Turner Valley gas field (35 miles southeast of Calgary). The total number of wells reported as producing at the end of the year was 63, as compared with 60 wells reported active in 1922. In addition to the fields mentioned previously, wells have also been bored successfully in the Viking gas field situated approximately 80 miles southeast of Edmonton.

The producing wells in the province of New Brunswick are confined to the Stony Creek field in Albert County, about eight miles south of Moncton. The natural gas produced is used largely for power, domestic heating and lighting purposes in Moncton. At the end of 1923 there were 21 wells in operation, 2 more than were reported active at the beginning of the year.

**Table 298.—Principal Statistics of the Natural Gas Industry in Canada, 1920-1923**

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$
1920.....	104	1,954	(a)	616	643,320	(a)	4,232,642
1921.....	103	2,021	30,368,478	885	882,907	1,405,222	4,594,164
1922.....	132	1,981	31,373,817	921	939,194	1,458,675	5,846,501
1923.....	192	2,060	38,722,854	867	1,050,366	1,789,097	5,884,618

(a) Data not available.

**Table 299.—Capital Employed in the Natural Gas Industry in Canada by Provinces, 1922 and 1923**

	1922				1923			
	New Brunswick	Ontario	Alberta	Canada	New Brunswick	Ontario	Alberta	Canada
Capital employed as represented by—	\$	\$	\$	\$	\$	\$	\$	\$
Cost of lands, buildings, plant machinery and tools.....		14,293,093	12,442,114	26,735,207		22,167,954	12,095,436	34,263,390
Cost of all materials and supplies on hand.....		216,009	472,310	688,319		372,100	371,377	743,477
Cash, trading and operating accounts and bills receivable....		3,260,562	488,665	3,749,227		3,030,918	423,458	3,454,376
<b>Total.....</b>	<b>201,064</b>	<b>17,769,664</b>	<b>13,403,089</b>	<b>31,373,817</b>	<b>261,611</b>	<b>25,570,972</b>	<b>12,890,271</b>	<b>38,722,854</b>

**Table 300.—Employees, Salaries and Wages in the Natural Gas Industry in Canada, 1922 and 1923**

	1922				1923			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
<b>SALARIED EMPLOYEES—</b>								
Salaried officers of corporation...	23	2	25	53,121	61	1	62	141,538
Superintendents, managers, etc...	41		41	62,164				
Technical employees, engineers, etc.....	7		7	12,960	6		6	12,600
Clerks, stenographers, etc.....	109	49	158	114,362	69	59	128	132,936
<b>Total.....</b>	<b>180</b>	<b>51</b>	<b>231</b>	<b>242,607</b>	<b>136</b>	<b>60</b>	<b>196</b>	<b>287,074</b>
<b>WAGE-EARNERS—Total.....</b>	<b>690</b>		<b>690</b>	<b>696,587</b>	<b>671</b>		<b>671</b>	<b>763,292</b>
<b>Grand Total.....</b>	<b>870</b>	<b>51</b>	<b>921</b>	<b>939,194</b>	<b>807</b>	<b>60</b>	<b>867</b>	<b>1,050,366</b>

Table 301.—Number of Wage-Earners in the Natural Gas Industry in Canada, by Months and by Provinces, 1923

Month	New Brunswick	Ontario	Alberta	Canada
January.....	6	436	132	574
February.....	5	416	113	534
March.....	5	422	139	566
April.....	8	425	155	588
May.....	27	459	179	665
June.....	31	453	218	702
July.....	37	506	225	768
August.....	35	514	227	776
September.....	47	493	212	752
October.....	38	500	178	716
November.....	30	507	135	672
December.....	27	476	141	644
Average.....	25	473	173	671

Table 302.—Number of Gas Wells in Canada, by Provinces, 1922 and 1923

	New Brunswick	Ontario	Manitoba	Alberta	Canada
Productive wells at beginning of year.....1922	20	1,930	1	64	2,015
.....1923	19	1,901	1	60	1,981
Number of productive wells drilled.....1922	.....	87	.....	1	88
.....1923	1	90	.....	2	93
Number of dry wells drilled.....1922	1	37	.....	2	33
.....1923	.....	24	.....	.....	24
Number of wells abandoned.....1922	1	118	.....	1	120
.....1923	.....	68	.....	2	70
Productive wells at end of year.....1922	19	1,901	1	60	1,981
.....1923	21	1,975	1	63	2,060

Table 303.—Natural Gas Wells in Ontario, by Townships, 1923

Township	No. of producing wells in operation Dec. 31, 1923	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Amabel.....	2			
Barton.....	1			
Bayham.....	56	1		2
Bertie.....	88	1	2	2
Binbrook.....	67			
Caledon E.....	48	1		
Caistor.....	3			
Canboro.....	167	3		6
Cayuga, North.....	59	2	2	4
Cayuga, South.....	58	2		
Charlotteville.....	16			
Colchester S.....			1	
Crowland.....	49		1	
Dawn.....	5		2	
Dorchester, North.....	3		1	
Dover, West.....	9		1	
Dunn.....	17	1		1
Dunwich.....			1	
Enniskillen.....	3	1		
Euphemia.....	6			
Gainsboro.....	2			
Glanford.....	29	1		2
Gosfield.....			1	4
Harwich.....	29			
Houghton.....	3			
Howard.....	33			3
Humberstone.....	104	3		
London.....			1	
Mersea.....	4			
Middleton.....	17	1		1
Malahide.....	2	1		1
Moore.....			1	
Moulton.....	109	3	2	13
Oneida.....	34	2		6
Onondaga.....	50			
Rainham.....	111	3		1
Raleigh.....	23	1		1
Romney.....	100	5	1	8
Sarnia.....	15	1	1	1
Seneca.....	161	4	5	16
Sherbrooke.....	12	1		1
Tilbury, East.....	137	4		4
Wainfleet.....	50			
Walpole.....	168	11	3	13
Walsingham, North.....	6	2		
Walsingham, South.....	12	4		
Windham.....	4			
Willoughby.....	41	3		
Woodhouse.....	62	6	1	4
<b>Total.....</b>	<b>1,975</b>	<b>68</b>	<b>24</b>	<b>90</b>

## PETROLEUM

The production of petroleum in Canada dates back to 1857 when a shallow well was dug near Enniskillen (now known as Oil Springs), in the province of Ontario. Early in January, 1862, a pioneer oil prospector brought in the first flowing well at Oil Springs, Ontario, and before the fall of the same year there were approximately 35 producing wells in operation. According to available information some of these wells produced from 3,000 to 6,000 barrels per day.

In 1865, Petrolia came into existence as a large producer and since that date has maintained its position among the leading oil-fields in Canada. Prior to this discovery, oil deposits were located in Kent County, at Bothwell. Although Petrolia, Oil Springs and Bothwell are by far the oldest producing fields in Canada, these three fields continue to rank as the premier producers in this country.

On December 31, 1923, there were 2,681 wells in operation in Ontario, while at the close of the previous year, 2,867 wells were active.

The outstanding feature of this industry in Ontario during 1923 was the bringing in of an oil well with an estimated production of 150 barrels per day, in Romney Township on the shore of Lake Erie. The importance of this well is that it lies in the Trenton group. Production from

the Trenton group has made the neighbouring state of Ohio one of the large producers of petroleum and natural gas in America. Heretofore, this formation has not been explored to any extent in Ontario.

The first attempt to develop the oil deposits in Westmoreland County in New Brunswick, was made in 1859. The four wells drilled then were not successful as fresh water seeped in, ruining them. No further drilling was attempted until 1879, then two more wells were sunk, one at St. Joseph and the other at Dover. From 1900 to 1906 some 72 wells were drilled, as follows: 67 in Westmoreland county, 4 in Albert county and 1 in Kent county. This marked the opening up of the present Stony Creek oil and gas field. Nine petroleum wells were in operation in this district on December 31, 1923.

In May, 1914, considerable interest was taken in the Turner Valley oil field in Alberta. The centre of this field is about 25 miles south of Calgary. In 1923 only 3 companies, operating 4 petroleum wells reported production in this district.

The new oil fields in the Mackenzie district of the Northwest Territories have been the scene of considerable activity during the past several years. Drilling operations were begun in this district, about 40 miles below Fort Norman, early in 1920.

In the Coutts-Sweetgrass district, southern Alberta, a number of companies continued drilling operations throughout 1923, although no production was reported.

Data regarding wells located in New Brunswick have been included in the section on "Natural Gas."

**Table 304.—Principal Statistics of the Petroleum Industry in Canada, 1920-1923**

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$
1920.....	122	3,027	(a)	202	182,787	(a)	822,235
1921.....	120	3,009	3,214,159	190	215,791	136,277	641,533
1922.....	120	2,880	2,764,099	160	167,176	116,678	611,176
1923.....	117	2,694	2,934,213	151	118,231	79,019	522,018

(a) Data not available.

**Table 305.—Capital Employed in the Petroleum Industry in Canada, by Provinces, 1922 and 1923**

	1922			1923		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
Capital employed as represented by—	\$	\$	\$	\$	\$	\$
Cost of lands, buildings, plant machinery and tools.....	1,910,967	770,585	<b>2,681,552</b>	2,023,414	771,715	<b>2,795,129</b>
Cost of all materials and supplies on hand....	13,117	27,571	<b>40,688</b>	21,016	27,992	<b>49,008</b>
Cash, trading and operating accounts and bills receivable.....	31,284	10,575	<b>41,859</b>	64,035	26,041	<b>90,076</b>
<b>Total.....</b>	<b>1,955,368</b>	<b>808,731</b>	<b>2,764,099</b>	<b>2,108,465</b>	<b>825,748</b>	<b>2,934,213</b>

**Table 306.—Employees, Salaries and Wages in the Petroleum Industry in Canada, by Provinces, 1922 and 1923**

	1922			1923		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
<b>SALARIED EMPLOYEES—</b>						
Salaried officers of corporation.....No.	7	1	8			
Salaries	\$ 9,302	\$ 4,800	\$ 14,102	10	2	12
Superintendents, managers, etc.....No.	9		9	\$ 12,140	\$ 3,040	\$ 15,180
Salaries	\$ 11,665		\$ 11,665			
Technical employees, engineers, etc.No.	1		1	2		2
Salaries	\$ 1,910		\$ 1,910	\$ 3,300		\$ 3,300
Clerks, stenographers, etc.....No.	2	1	3	2	1	3
Salaries	\$ 1,220	\$ 1,020	\$ 2,240	\$ 1,016	\$ 573	\$ 1,589
Total.....No.	19	2	21	14	3	17
Salaries	\$ 24,097	\$ 5,820	\$ 29,917	\$ 16,456	\$ 3,613	\$ 20,069
<b>WAGE-EARNERS—</b>						
Total.....No.	134	5	139	130	4	134
Wages	\$ 132,402	\$ 4,857	\$ 137,259	\$ 95,032	\$ 3,130	\$ 98,162
<b>Grand Total.....No.</b>	<b>153</b>	<b>7</b>	<b>160</b>	<b>144</b>	<b>7</b>	<b>151</b>
Salaries and Wages	\$ 156,499	\$ 10,677	\$ 167,176	\$ 111,488	\$ 6,743	\$ 118,231

**Table 307.—Monthly Average Number of Wage-Earners in the Petroleum Industry in Canada, by Provinces, 1922 and 1923**

Month	1922			1923		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
January.....	130	3	133	108	3	111
February.....	131	3	134	109	2	111
March.....	134	2	136	111	2	113
April.....	132	4	136	110	2	112
May.....	134	3	137	115	5	120
June.....	135	5	140	117	4	121
July.....	135	4	139	122	4	126
August.....	136	5	141	123	4	127
September.....	136	6	142	118	4	122
October.....	140	4	144	113	2	115
November.....	137	6	143	108	3	111
December.....	134	6	140	105	2	107
Average.....	134	5	139	130	4	134

**Table 308.—Petroleum Wells in Canada, 1922 and 1923**

		New Brunswick	Ontario	Alberta	Canada
Productive wells at beginning of year.....	1922	7	2,997	5	3,009
	1923	9	2,867	4	2,880
Number of productive wells drilled.....	1922	2	7		9
	1923		15		15
Number of wells abandoned.....	1922		95		95
	1923		11		11
Number of productive wells at end of year.....	1922	9	2,867	4	2,880
	1923	9	2,681	4	2,694

## SALT

The production of salt in the province of Ontario was first recorded in 1866 when a company was formed to drill for oil on the north bank of the Maitland river, and, while no success attended the efforts of the drillers in their search for oil, a bed of rock salt was found at a depth of 964 feet. In September, 1866, this company (incorporated under the name of the Goderich Petroleum Company, later changed to "Goderich Salt Company") commenced pumping brine. In the initial working in connection with these deposits the refining was done by the kettle method, which was soon discarded and replaced by the pan method of evaporation.

Wells were drilled and plants erected at Clinton and Seaforth, Ontario, and four refineries were in operation at Goderich in 1879; at the present time there are only two firms operating at Goderich.

In 1923, wells were operated in Ontario at Windsor, Sandwich, Courtright, Exeter, Goderich, Kincardine, Sarnia, Warwick, Wingham and in Anderdon township. Mining of rock salt was carried on by one firm in Nova Scotia, at Malagash, Cumberland County.

For the whole of Canada, eleven firms, operating twelve salt works, reported activity during 1923. Two of these plants were engaged primarily in the production of brine for use in the manufacture of caustic soda and soda ash in the chemical works of the producing companies.

**Table 309.—Principal Statistics of the Salt Industry in Canada, 1920-1923**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	12	2,221,606	345	472,031	531,880	409,493	1,544,724
1921.....	12	2,287,708	277	411,832	527,013	381,126	1,673,685
1922.....	10	2,205,184	371	432,261	369,000	407,105	1,628,323
1923.....	11	2,406,992	368	412,597	356,794	404,046	1,713,516

**Table 310.—Capital Employed in the Salt Industry in Canada, 1922 and 1923**

	1922	1923
	\$	\$
Capital employed as represented by—		
Cost of lands, buildings, machinery and tools.....	1,399,424	1,545,576
Cost of all materials and supplies on hand.....	228,860	278,106
Cash, trading and operating accounts and bills receivable.....	576,900	583,310
<b>Total.....</b>	<b>2,205,184</b>	<b>2,406,992</b>

**Table 311.—Employees, Salaries and Wages in the Salt Industry in Canada, 1922 and 1923**

	1922				1923			
	Number of employees		Total	Salaries and wages	Number of employees		Total	Salaries and wages
	Male	Female			Male	Female		
<b>SALARIED EMPLOYEES—</b>				\$				
Salaried officers of corporation...	7		7	28,582	16		16	50,928
General superintendents and managers.....	11		11	26,797				
Technical experts, engineers, chemists, accountants.....	10		10	11,714	7		7	18,270
Clerks, stenographers, salesmen and other salaried employees..	11	9	20	27,506	14	15	29	34,029
<b>Total.....</b>	<b>39</b>	<b>9</b>	<b>48</b>	<b>94,599</b>	<b>37</b>	<b>15</b>	<b>52</b>	<b>103,227</b>
<b>WAGE-EARNERS—</b>								
<b>Total.....</b>	<b>293</b>	<b>30</b>	<b>323</b>	<b>337,662</b>	<b>292</b>	<b>24</b>	<b>316</b>	<b>309,370</b>
<b>Grand total.....</b>	<b>332</b>	<b>39</b>	<b>371</b>	<b>432,261</b>	<b>329</b>	<b>39</b>	<b>368</b>	<b>412,597</b>

**Table 312.—Number of Wage-earners in the Salt Industry in Canada, by Months, 1922 and 1923**

Month	1922		1923		Month	1922		1923	
	Male	Female	Male	Female		Male	Female	Male	Female
January.....	237	30	253	24	July.....	301	29	307	24
February.....	275	31	265	26	August.....	298	29	253	25
March.....	271	31	260	24	September.....	290	33	292	25
April.....	246	30	283	23	October.....	299	32	305	25
May.....	261	29	300	23	November.....	282	30	306	24
June.....	276	30	278	25	December.....	244	27	275	22

## MISCELLANEOUS NON-METALLIC MINERAL INDUSTRIES

Table 313.—Capital Employed in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1922 and 1923

Industry	1922				1923			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, plant machinery and tools	Cost of all materials and supplies on hand	Cash, trading and operating accounts and bills receivable	Total	Lands, buildings, plant, machinery and tools	Cost of all materials and supplies, on hand	Cash, trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Fluorspar*.....	317,943	5,394		323,337				
Grindstones.....	203,657	20,892	35,117	259,666	96,567	29,633	33,889	160,094
Iron oxides.....	184,750	7,678	25,000	217,428	176,253	32,527	560	209,340
Magnesite.....	1,705,708	85,087	45,143	1,835,938	1,706,874	127,186	53,198	1,887,258
Quartz.....	659,051	42,224	5,905	707,180	940,954	87,202	16,300	1,044,456
Talc.....	487,028	22,523	84,463	594,019	509,693	29,020	140,624	679,337
Other non-metallics <sup>1</sup> .....	2,727,951	468,375	26,213	3,222,539	3,093,438	356,528	25,461	3,475,427
<b>Total.....</b>	<b>6,286,668</b>	<b>652,173</b>	<b>221,846</b>	<b>7,160,107</b>	<b>6,523,779</b>	<b>662,101</b>	<b>270,032</b>	<b>7,455,912</b>

\*Included with "Other Non-Metallics", in 1923.

<sup>1</sup>Includes actinolite, alunite, barytes, corundum, magnesium sulphate, manganese, mineral waters, pyrites, sodium sulphate and tripolite.

Table 314.—Employees, Salaries and Wages in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1922 and 1923

	1922					1923				
	Super-intendents and managers	Technical employees	Clerks and stenographers	Wage-earners and wages	Total	Super-intendents and managers	Technical employees	Clerks and stenographers	Wage-earners and wages	Total
Fluorspar*.....	No. 1		1	50	52					
Salaries \$	2,490		120	22,970	25,580					
Grindstones.....	No. 6		1	33	40	5		1	56	62
Salaries \$	8,298		1,000	21,901	31,199	12,000		2,000	36,200	50,200
Iron oxides.....	No. 1		1	47	49	1		2	57	60
Salaries \$	3,000		1,200	40,639	44,839	3,000		2,500	43,556	49,056
Magnesite.....	No. 3	1	2	126	132	4	2	5	63	74
Salaries \$	6,476	1,659	2,417	48,026	58,578	8,110	3,217	6,129	90,475	107,931
Quartz.....	No. 6	2		143	151	6	1	4	267	278
Salaries \$	14,094	2,660		57,658	74,412	20,497	5,000	3,140	255,552	284,189
Talc.....	No. 6	2	2	71	81	4	1	3	52	60
Salaries \$	20,334	3,800	2,450	61,925	88,509	8,400	1,800	2,700	46,421	59,321
Other non-metallics <sup>1</sup> .....	No. 18	3	12	131	164	13	6	9	159	187
Salaries \$	29,814	4,800	11,771	84,601	130,986	26,425	5,299	9,496	109,237	150,457
<b>Total.....</b>	<b>No. 41</b>	<b>8</b>	<b>19</b>	<b>601</b>	<b>669</b>	<b>33</b>	<b>10</b>	<b>24</b>	<b>654</b>	<b>721</b>
<b>Salaries \$</b>	<b>84,506</b>	<b>12,919</b>	<b>18,958</b>	<b>337,720</b>	<b>454,103</b>	<b>78,432</b>	<b>15,316</b>	<b>25,965</b>	<b>581,441</b>	<b>701,154</b>

\*Included with "Other Non-Metallics", in 1923.

<sup>1</sup>Includes actinolite, alunite, barytes, corundum, magnesium sulphate, manganese, mineral waters, pyrites, sodium sulphate and tripolite.

Table 315.—Number of Wage-Earners, by Months, in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1923

Month	Grind-stones	Iron-oxides	Magne-site	Quartz	Talc	Other non-metallics	Total
January.....	13	29	52	79	50	102	325
February.....	9	29	40	118	47	121	364
March.....	4	29	35	178	43	129	418
April.....	4	29	20	209	43	135	440
May.....	84	41	91	294	46	135	691
June.....	108	57	104	263	45	101	678
July.....	107	57	33	298	38	105	638
August.....	62	62	40	298	38	104	604
September.....	53	68	81	254	36	108	600
October.....	54	49	72	208	46	110	539
November.....	49	47	68	221	30	128	543
December.....	15	40	32	109	48	139	383
Average.....	56	57	63	267	52	159	654

Table 316.—Miscellaneous Expenses in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1922 and 1923

Industry	1922	1923
	\$	\$
Fluorspar.....	33,588	*
Grindstones.....	25,972	19,195
Iron oxides.....	54,041	55,318
Magnesite.....	49,627	37,832
Quartz.....	28,506	161,881
Talc.....	50,155	49,239
Other non-metallics†.....	59,223	121,213
Total.....	301,112	441,678

\* Included with "other non-metallics."

† Includes actinolite, alunite, barytes, corundum, magnesium sulphate, mineral waters, pyrites, sodium sulphate, and tripolite.

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

## CEMENT

Only portland cement was produced in Canada in 1923. The essential elements entering into the production of this commodity are lime, silica and alumina. These materials are found in limestone and clay, the Trenton variety of limestone being used principally. Puzzolan cement made from blast furnace slag by one company in Nova Scotia, was manufactured in 1921 and in former years, but there has been no production of this commodity during the past two years.

Six companies, operating 10 plants with a total daily capacity of 33,538 barrels, were active during 1923. These plants were located in Quebec, Ontario, Manitoba, Alberta and British Columbia. In addition to these, there were at least thirteen other cement mills equipped and available for the manufacture of this product.

No data regarding the distribution of ownership in this industry were collected in the current year. According to statistics compiled for 1921, the cement industry is controlled almost entirely by Canadian capital. Of the total par value of all securities outstanding in 1921, approximately 86.5 per cent was owned in Canada; 10.6 per cent in Great Britain, 1.9 per cent in United States, and the balance in other countries.

Table 317.—Principal Statistics of the Cement Industry in Canada, 1920-1923

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	13	44,941,686	2,301	3,757,641	3,457,796	1,738,152	14,798,070
1921.....	14	49,160,180	2,751	3,443,884	2,788,820	2,602,029	14,195,143
1922.....	11	41,573,737	1,753	2,315,240	2,457,456	2,976,152	15,438,481
1923.....	10	38,284,494	1,842	2,551,784	2,809,414	2,947,242	15,064,661

Table 318.—Capital Employed in the Cement Industry in Canada, 1922 and 1923

	1922	1923
	\$	\$
Capital employed as represented by—		
Cost of lands, buildings and fixtures.....	35,930,466	33,922,549
Cost of machinery and tools.....		
Cost of materials and supplies on hand.....		
Cash, trading and operating accounts and bills receivable.....	2,920,895	2,931,641
	2,722,356	1,430,304
<b>Total.....</b>	<b>41,573,737</b>	<b>38,284,494</b>

Table 319.—Employees, Salaries and Wages Paid in the Cement Industry in Canada, 1922 and 1923

Class	1922		1923	
	Number of employees	Salaries and wages	Number of employees	Salaries and wages
		\$		\$
Officers, superintendents and managers.....	23	91,932	22	83,898
Clerks, stenographers and other salaried employees.....	86	125,526	90	111,850
Wage-earners.....	1,644	2,097,782	1,730	2,356,036
<b>Total.....</b>	<b>1,753</b>	<b>2,315,240</b>	<b>1,842</b>	<b>2,551,784</b>

Table 320.—Number of Wage-Earners in the Cement Industry in Canada, by Months, 1922 and 1923

Month	1922	1923	Month	1922	1923
January.....	1,002	1,455	July.....	1,843	2,004
February.....	1,109	1,471	August.....	1,842	2,059
March.....	1,185	1,488	September.....	1,934	2,072
April.....	1,448	1,528	October.....	1,922	1,871
May.....	1,755	1,779	November.....	1,907	1,703
June.....	1,860	1,880	December.....	1,719	1,542
Average for 1922.....					1,644
Average for 1923.....					1,730

## CLAY PRODUCTS

The production of clay products in Canada for the past three years has been tabulated in considerable detail in another section of this report, and the object of this description is a consideration of the statistics regarding the more important financial aspects and the general conditions of the industry.

The clay products industry was divided into five main groups as follows: brick and tile, clay sewer-pipe, fire brick and fire clay, stoneware and pottery, and kaolin and other clays. The number and location by provinces of the plants operating in 1923 are shown in the subjoined tables.

Capital employed, as represented by the value of lands, buildings, fixtures, machinery and tools, finished stocks on hand and available cash, for the whole clay products industry was greater by \$1,125,468 in 1923 than in the preceding year, practically the whole of the gain being in the brick and tile section. The capital employed by firms in the firebrick and stoneware industries increased slightly, while a small decrease was observed in the capital of the clay sewer-pipe establishments.

The principal fuel employed was bituminous coal, and as most of the important brick plants are located in the neighbourhood of the large industrial centres of Ontario and Quebec, the industry is largely dependent on imported coal. Wood is used by many of the smaller plants in outlying parts.

Natural gas is of material assistance to the clay industries at Medicine Hat and Redcliff, Alberta. The Medalta Potteries at Medicine Hat bring their clays in from Saskatchewan and, owing to their low costs, are able to ship stoneware into Ontario and Quebec markets in competition with the potteries of those provinces. The clays near Redcliff are obtained by mining and are consequently very difficult to dry and burn; the advantage of having cheap fuel at hand enables the operators to produce pressed brick at reasonable costs.

In the tables on the primary mineral production of Canada statistics relating to the clay products industry include only data supplied by companies using Canadian clays either alone or with imported clays. But there are a few other companies in Canada producing clay products from imported clays exclusively. For this reason, and to complete the survey of the industry as a whole, additional tables have been prepared which contain information regarding the operations of these companies in 1923.

Tables 321 to 326 relate to data included in mineral production tables; tables 327 to 330 show corresponding information concerning companies using imported clays. Table 331 contains summary statistics relating to both sections of the industry.

Table 321.—Principal Statistics of the Clay Products\* Industry in Canada, 1922 and 1923

	1922				1923			
	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery
Number of active plants.....	216	5	5	4	204	5	6	4
Capital employed.....	\$23,821,180	3,057,149	1,705,753	280,467	24,866,834	3,022,522	1,786,353	314,862
Salaries employees.....	309	34	17	8	320	28	19	12
Salaries paid.....	\$ 529,867	114,290	45,916	12,970	514,189	89,860	57,656	16,439
Average number of wage-earners.....	3,595	414	165	104	3,634	431	173	107
Wages paid.....	\$ 3,252,474	433,121	218,632	111,605	3,471,298	471,655	228,721	100,782
Fuel cost.....	\$ 1,644,463	217,228	82,228	12,652	2,254,445	307,681	90,286	14,607
Miscellaneous expenses.....	\$ 2,112,790	282,705	53,015	22,010	1,410,051	307,840	61,277	88,233
Value of products sold or used....	\$ 8,911,539	1,571,464	683,266	252,889	8,220,269	1,421,002	605,968	230,924

\*Not including Kaolin and Other Clays.

Table 322.—Establishments Reporting Shipments in the Clay Products Industry in Canada, by Provinces, 1923

Province	Number of establishments in groups indicated					Total
	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Kaolin and other clays	
Nova Scotia.....	6	1	2		1	10
New Brunswick.....	4			1		5
Quebec.....	17	1	1		1	20
Ontario.....	143	3	2	2		150
Manitoba.....	6					6
Saskatchewan.....	8					8
Alberta.....	10		1	1		12
British Columbia.....	10					10
<b>Canada.....</b>	<b>204</b>	<b>5</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>221</b>

Table 323.—Capital Employed in the Clay Products Industry in Canada, by Provinces, 1922 and 1923

	1922				1923			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
<b>By Industries—</b>								
<i>Brick and tile—</i>								
Nova Scotia.....	1,081,795	42,750	38,276	<b>1,162,821</b>	791,339	54,268	24,143	<b>869,750</b>
New Brunswick.....	109,246	5,349	3,046	<b>117,641</b>	71,746	5,785	21,468	<b>98,999</b>
Quebec.....	6,126,526	403,693	269,995	<b>6,800,214</b>	6,547,919	592,302	154,466	<b>7,294,687</b>
Ontario.....	9,695,211	961,639	1,097,042	<b>11,753,892</b>	9,774,918	1,427,725	1,961,391	<b>13,164,034</b>
Manitoba.....	257,462	103,622	45,719	<b>406,803</b>	242,199	61,700	63,901	<b>367,800</b>
Saskatchewan.....	690,218	130,283	12,967	<b>833,468</b>	647,559	76,060	11,836	<b>735,455</b>
Alberta.....	1,002,618	190,199	47,488	<b>1,240,295</b>	1,189,673	143,950	44,912	<b>1,378,535</b>
British Columbia.....	960,759	194,749	350,548	<b>1,506,056</b>	707,582	189,187	60,805	<b>957,574</b>
Total for Canada.....	19,923,835	2,032,284	1,865,061	<b>23,821,180</b>	19,972,935	2,550,977	2,342,922	<b>24,866,834</b>
<i>Clay sewer pipe—</i>								
Total for Canada.....	2,435,980	440,763	180,406	<b>3,057,149</b>	2,376,618	459,259	186,645	<b>3,022,522</b>
<i>Firebrick and fireclay products—</i>								
Total for Canada.....	1,086,356	200,317	419,080	<b>1,705,753</b>	1,098,003	236,506	451,844	<b>17,863,353</b>
<i>Stoneware and pottery—</i>								
Total for Canada.....	135,464	77,260	67,743	<b>280,467</b>	162,130	78,212	74,520	<b>314,862</b>
<i>Kaolin and other clays—</i>								
Total for Canada.....	2,300,698	1,919	1,737	<b>2,304,354</b>	2,303,800			<b>2,303,800</b>
<b>By Provinces—</b>								
<i>Total for clay and clay products—</i>								
Nova Scotia.....	1,585,050	109,687	40,932	<b>1,735,669</b>	1,254,660	157,802	27,433	<b>1,439,895</b>
New Brunswick.....	123,277	17,703	8,689	<b>149,669</b>	85,181	22,706	26,988	<b>134,875</b>
Quebec.....	9,102,627	525,158	524,377	<b>10,152,162</b>	9,558,829	716,065	417,247	<b>10,692,141</b>
Ontario.....	11,806,012	1,283,658	1,273,662	<b>14,363,332</b>	11,865,372	1,742,251	2,168,123	<b>15,775,746</b>
Manitoba.....	257,462	103,622	45,719	<b>406,803</b>	242,199	61,700	63,901	<b>367,800</b>
Saskatchewan.....	690,218	130,283	12,967	<b>833,468</b>	647,559	76,060	11,836	<b>735,455</b>
Alberta.....	1,356,928	387,683	277,133	<b>2,021,744</b>	1,552,104	359,183	279,598	<b>2,190,885</b>
British Columbia.....	960,759	194,749	350,548	<b>1,506,056</b>	707,582	189,187	60,805	<b>957,574</b>
<b>Canada.....</b>	<b>25,882,333</b>	<b>2,752,543</b>	<b>2,534,027</b>	<b>31,168,903</b>	<b>25,913,486</b>	<b>3,324,954</b>	<b>3,055,931</b>	<b>32,294,371</b>

Table 324.—Employees, Salaries and Wages in the Clay Products Industry in Canada  
1922 and 1923

	1922				1923			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
<b>SALARIED EMPLOYEES—</b>				\$				\$
Salaried officers of Corporation...	107	1	108	259,663	207	1	208	516,064
General superintendents or managers.....	128		128	291,216				
Technical experts, engineers, chemists, accountants, etc.....	17		17	26,520	32		32	45,915
Clerks, stenographers, salesmen and other salaried employees..	83	34	117	130,444	103	36	139	176,165
<b>Total.....</b>	<b>335</b>	<b>35</b>	<b>370</b>	<b>707,843</b>	<b>342</b>	<b>37</b>	<b>379</b>	<b>738,144</b>
<b>WAGE-EARNERS—Total.....</b>	<b>4,269</b>	<b>42</b>	<b>4,311</b>	<b>4,044,498</b>	<b>4,313</b>	<b>38</b>	<b>4,351</b>	<b>4,273,556</b>
<b>Grand total.....</b>	<b>4,604</b>	<b>77</b>	<b>4,681</b>	<b>4,752,341</b>	<b>4,655</b>	<b>75</b>	<b>4,730</b>	<b>5,011,700</b>

Table 325.—Number of Wage-Earners in the Clay Products Industry in Canada, by  
Months and by Industries, 1923

Month	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Kaolin and other clays	Total for clay and products
January.....	1,788	407	126	99		2,420
February.....	1,741	394	139	102		2,376
March.....	2,046	382	150	106		2,684
April.....	2,674	399	192	110		3,375
May.....	3,898	426	187	111	6	4,628
June.....	4,392	444	186	104	6	5,132
July.....	4,287	456	204	101		5,048
August.....	4,190	456	189	106		4,941
September.....	3,709	449	171	115		4,444
October.....	3,194	462	161	115	6	3,938
November.....	2,661	450	162	104	7	3,384
December.....	1,917	445	169	103		2,634
<b>Average* for 1923.....</b>	<b>3,634</b>	<b>431</b>	<b>173</b>	<b>107</b>	<b>6</b>	<b>4,351</b>
<b>Average for 1922.....</b>	<b>3,595</b>	<b>414</b>	<b>165</b>	<b>104</b>	<b>33</b>	<b>4,311</b>

\* Average computed by totalling the average number of wage-earners employed by each reporting company.

Table 326.—Miscellaneous Expenses in the Clay Products Industry in Canada, by  
Provinces, 1922 and 1923

Province	1922	1923
	\$	\$
Nova Scotia.....	128,268	145,637
New Brunswick.....	10,875	75
Quebec.....	731,141	410,563
Ontario.....	1,451,496	1,056,122
Manitoba.....	14,821	32,252
Saskatchewan.....	12,261	24,551
Alberta.....	80,992	155,488
British Columbia.....	58,856	43,210
<b>Canada.....</b>	<b>2,487,710</b>	<b>1,867,898</b>

Table 327.—Capital Employed by Companies in Canada Using Only Imported Clays, 1923

	1923
	\$
Capital Employed as Represented by—	
Cost of lands, buildings, plant machinery and tools.....	1,073,038
Cost of supplies and stock on hand.....	514,499
Cash, trading and operating accounts.....	501,975
<b>Total.....</b>	<b>2,089,512</b>

Table 328.—Number Employed, Salaries and Wages Paid by Companies in Canada Using Only Imported Clays, 1923

	Number employed			Salaries and wages
	Male	Female	Total	
<b>SALARIED EMPLOYEES—</b>				\$
General superintendents and managers.....	16	1	17	55,106
Technical experts, engineers, chemists, accountants.....	9		9	19,587
Clerks, stenographers, salesmen and other salaried employees.....	18	10	28	42,178
<b>Total.....</b>	<b>43</b>	<b>11</b>	<b>54</b>	<b>116,871</b>
<b>WAGE-EARNERS—Total.....</b>	<b>600</b>		<b>600</b>	<b>659,588</b>
<b>Grand Total.....</b>	<b>643</b>	<b>11</b>	<b>654</b>	<b>776,459</b>

Table 329.—Number of Wage-Earners Employed by Companies in Canada Using Only Imported Clays, by Months, 1923

Month	Number	Month	Number
January.....	565	July.....	647
February.....	541	August.....	613
March.....	553	September.....	585
April.....	566	October.....	574
May.....	592	November.....	574
June.....	619	December.....	597
<b>Average.....</b>			<b>600</b>

Table 330.—Fuel and Electricity Used by Companies in Canada Using Only Imported Clays, 1923

	Quantity	Value
		\$
Bituminous coal.....Short Tons	13,356	104,813
Anthracite coal....."	4,298	56,067
Coke....."	25	328
Oil (fuel).....Imp. Gal.	120,199	14,258
Wood.....Cord	339	1,552
Gas.....M cu.ft.	448	314
Electricity.....		10,342
Other fuel.....		216
<b>Total.....</b>		<b>187,890</b>

Table 331.—Production of Clay Products in Canada from Domestic and Imported Clays, 1922 and 1923

Item	From domestic clays		From imported clays		Total	
	1922	1923	1922	1923	1922	1923
	\$	\$	\$	\$	\$	\$
Fireclay blocks and shapes.....	67,588	81,345	99,390	271,227	166,978	352,572
Sanitary ware.....			437,346	417,454	437,346	417,454
Coarse earthenware.....	266,391	229,547	61,846	78,453	328,237	308,000
Electrical porcelain insulators.....			686,891	1,310,899	686,891	1,310,899
Other clay products (brick, tile, sewer-pipe, etc.).....	11,104,477	10,172,124			11,104,477	10,172,124
<b>Total.....</b>	<b>11,438,456</b>	<b>10,483,016</b>	<b>1,285,473</b>	<b>2,078,033</b>	<b>12,723,929</b>	<b>12,561,049</b>

## LIME BURNING

The greatest development in Canada in the business of lime burning has been in Ontario and to a less extent in Quebec. Apart from the fact that the chemical and physical properties of the limestone in these provinces make it suitable for burning in kilns, the more extensive building and construction operations carried on provide a ready market for the burned lime. In the whole of Canada during 1923 there were 56 producing plants, 29 plants being located in Ontario, 13 in Quebec, 1 in Nova Scotia, 5 in New Brunswick, 3 in Manitoba, 2 in Alberta and 3 in British Columbia.

The total capital employed in the lime industry amounted to approximately 6 million dollars. The 43 plants in Ontario and Quebec reported \$3,933,365, capital employed, while the 3 plants in British Columbia showed \$1,163,744 under this item.

Returns received from operators in 1923 showed 197 active kilns, the daily capacity of which was 2,456 tons. Eight hydrators were in operation during the year, comprising four Clyde, one Shaffer, one Kritzer and one special type. High calcium limestone was used by 45 firms, dolomite by 10 firms and both high calcium and dolomite by one operator.

In the manufacture of lime, fuel is one of the principal items of cost. Wood was widely used throughout Ontario and Quebec where the supply is plentiful and where many of the kilns are small, but considerable quantities of coal were also used. In the British Columbia plants, only wood was used.

Table 332.—Principal Statistics of the Lime Industry in Canada, 1920-1923

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	58	(a)	1,069	1,314,186	(a)	(a)	3,818,553
1921.....	66	4,990,969	931	949,966	698,992	407,620	2,781,197
1922.....	63	4,984,910	1,110	1,013,486	725,168	522,222	3,165,005
1923.....	50	6,050,954	1,197	1,191,416	953,709	806,916	3,266,608

(a) Data not available.

Table 333.—Capital Employed in the Lime Industry in Canada, by Provinces, 1922 and 1923

Province	1922				1923			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
New Brunswick.....	161,860	46,153	72,979	280,992	210,539	36,208	55,302	302,049
Quebec.....	877,132	90,920	131,430	1,099,482	1,664,892	191,324	177,401	2,033,617
Ontario.....	1,294,868	129,988	241,864	1,666,720	1,438,929	225,016	234,903	1,898,748
Manitoba.....	496,281	29,430	3,858	529,569	448,223	36,434	6,193	490,850
Alberta.....	191,155	6,750	22,196	220,101	133,564	8,325	18,048	160,937
British Columbia.....	1,094,262	60,549	33,235	1,188,046	1,017,905	61,308	84,531	1,163,744
<b>Canada.....</b>	<b>4,115,558</b>	<b>363,790</b>	<b>505,562</b>	<b>4,984,910</b>	<b>4,915,052</b>	<b>559,524</b>	<b>576,378</b>	<b>6,050,954</b>

Table 334.—Employees, Salaries and Wages in the Lime Industry in Canada, by Provinces, 1922 and 1923

	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
<b>1922</b>							
<b>SALARIED EMPLOYEES:—</b>							
Salaried officers of the corporation..... No.	5	3	14	1	1	2	26
Salary \$	6,650	11,000	31,374	1,800	2,000	3,900	56,724
General superintendents and managers No.	1	7	12	2	2	4	28
Salary \$	1,500	16,612	20,632	3,720	3,700	13,385	59,549
Technical experts, accountants, etc. No.	1	1	1	1	.....	.....	4
Salary \$	1,500	1,800	900	1,800	.....	.....	6,000
Clerks, stenographers and salesmen No.	4	8	10	2	.....	5	29
Salary \$	4,000	7,303	6,761	2,400	.....	8,880	29,344
Total..... No.	11	19	37	6	3	11	87
Salary \$	13,650	36,715	59,667	9,720	5,700	26,165	151,617
<b>WAGE-EARNERS:—</b>							
Total—							
Male..... No.	87	250	442	77	22	145	1,023
Wages..... \$	62,673	198,321	408,731	51,850	15,921	124,373	861,869
<b>Total Employees..... No.</b>	<b>98</b>	<b>269</b>	<b>479</b>	<b>83</b>	<b>25</b>	<b>156</b>	<b>1,110</b>
<b>Total Salaries and Wages..... \$</b>	<b>76,323</b>	<b>235,036</b>	<b>468,398</b>	<b>61,570</b>	<b>21,621</b>	<b>150,538</b>	<b>1,013,486</b>
<b>1923</b>							
<b>SALARIED EMPLOYEES:—</b>							
General superintendents and managers No.	*	9	23	2	2	6	49
Salary \$	10,100	31,500	46,098	3,900	5,000	22,015	118,613
Technical experts, accountants, etc. No.	1	1	3	2	.....	2	9
Salary \$	1,500	3,900	3,320	3,420	.....	3,801	15,941
Clerks, stenographers and salesmen No.	4	13	11	2	.....	6	36
Salary \$	3,548	13,730	7,589	2,557	.....	8,350	35,514
Total..... No.	12	23	37	6	2	14	94
Salary \$	15,148	49,130	57,907	9,877	5,000	34,166	170,068
<b>WAGE-EARNERS:—</b>							
Total—							
Male..... No.	97	255	542	79	14	116	1,103
Wages..... \$	72,470	212,297	549,613	58,229	13,862	114,617	1,021,348
<b>Total Employees..... No.</b>	<b>109</b>	<b>278</b>	<b>579</b>	<b>85</b>	<b>16</b>	<b>130</b>	<b>1,197</b>
<b>Total Salaries and Wages..... \$</b>	<b>87,618</b>	<b>261,427</b>	<b>606,620</b>	<b>68,106</b>	<b>18,862</b>	<b>148,783</b>	<b>1,191,416</b>

\*Includes Nova Scotia.

Table 335.—Number of Wage-Earners in the Lime Industry in Canada, by Provinces and by Months, 1923

Month	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
January.....	73	192	465	63	11	103	907
February.....	66	196	470	61	11	96	900
March.....	88	242	516	72	19	115	1,052
April.....	106	237	548	97	19	127	1,134
May.....	103	269	579	101	17	130	1,199
June.....	105	297	604	101	20	114	1,241
July.....	103	276	573	92	21	113	1,178
August.....	102	270	540	89	15	124	1,140
September.....	91	263	528	76	12	107	1,077
October.....	102	259	515	73	12	112	1,073
November.....	99	248	507	70	8	110	1,042
December.....	88	189	465	56	6	103	907
<b>Average for 1923.....</b>	<b>97</b>	<b>255</b>	<b>542</b>	<b>79</b>	<b>14</b>	<b>116</b>	<b>1,103</b>
<b>Average for 1922.....</b>	<b>87</b>	<b>250</b>	<b>442</b>	<b>77</b>	<b>22</b>	<b>145</b>	<b>1,023</b>

**Table 336.—Miscellaneous Expenses in the Lime Industry in Canada, by Provinces, 1922 and 1923**

	1922	1923
	\$	\$
New Brunswick.....	23,879	21,139
Quebec.....	125,068	109,458
Ontario.....	282,951	525,180
Manitoba.....	19,950	30,140
Alberta.....	16,975	8,485
British Columbia.....	53,399	112,514
<b>Canada.....</b>	<b>522,222</b>	<b>806,916</b>

**SAND AND GRAVEL**

For statistical purposes, the sand and gravel industry has been divided into two parts comprising the operations of (1) railway companies producing sand and gravel for ballast and other purposes; (2) all other producers.

The figures given in the following tables do not include the operations of railway companies except where specifically mentioned. The railway companies were not asked to furnish any statistics for this industry other than the figures for production, as, owing to the varied nature of their operations, it would have been impossible for them to give the detailed data generally required. Among the other operating plants in this industry, of which there were 598, in Canada in 1923, it was found that the production of sand and gravel was often a subsidiary part of the business transacted. On this account the figures shown for capital employed in 1923 refer in small part to other industries, but on the whole relate as closely as possible to the industry under review.

It will be readily apparent from an inspection of the tables on employees that totals do not represent the actual number of persons engaged in the industry as a great many of the smaller operators had no paid help. Also, in some instances the labour was provided by those requiring sand and gravel. The following tables which show comparative figures for salaried officials, wage-earners, fuel costs and miscellaneous expenses are self-explanatory.

**Table 337.—Principal Statistics of the Sand and Gravel Industry in Canada, 1920-1923**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	186	(a)	1,546	1,343,212	(a)	(a)	4,291,067
1921.....	218	(a)	590	454,910	47,641	265,403	2,537,249
1922.....	342	4,098,928	750	684,626	99,069	445,222	3,502,935
1923.....	598	4,487,005	801	692,161	99,409	270,554	3,016,518

(a) Data not available.

Table 338.—Capital Employed in the Sand and Gravel Industry in Canada, by Provinces, 1922 and 1923

	1922				1923			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	22,107	1,000	6,832	29,939	16,500	2,500	7,425	26,425
New Brunswick.....					5,500	56		5,556
Quebec.....	309,258	4,474	6,991	320,723	320,252	3,285	20,693	344,230
Ontario.....	2,302,482	89,891	231,302	2,623,675	2,249,874	231,109	365,612	2,846,595
Manitoba.....	292,701	8,083	76,540	377,324	372,914	12,945	34,874	420,733
Saskatchewan.....	39,750			39,750	39,750			39,750
Alberta.....	182,898		1,165	184,063	201,978	160	212	202,350
British Columbia.....	496,703	1,084	25,667	523,454	578,384	655	22,327	601,366
<b>Canada.....</b>	<b>3,645,899</b>	<b>104,532</b>	<b>348,497</b>	<b>4,098,928</b>	<b>3,785,152</b>	<b>250,710</b>	<b>451,143</b>	<b>4,487,005</b>

Table 339.—Employees, Salaries and Wages in the Sand and Gravel Industry in Canada, by Provinces, 1922 and 1923

Province	1922				1923			
	Number of employees			Salaries and wages	Number of employees			Salaries and wages
	On salary	On wages	Total		On salary	On wages	Total	
				\$				\$
Nova Scotia.....	3	31	34	17,670	3	37	40	14,556
New Brunswick.....		12	12	2,549	1	10	11	1,841
Quebec.....	8	84	92	50,416	9	83	92	51,741
Ontario.....	69	404	473	449,869	67	481	548	512,522
Manitoba.....	7	40	47	57,426	6	19	25	28,340
Saskatchewan.....		7	7	5,292		5	5	3,993
Alberta.....	2	30	32	18,181	2	29	31	18,575
British Columbia.....	9	44	53	83,223	8	41	49	60,593
<b>Canada.....</b>	<b>98</b>	<b>652</b>	<b>750</b>	<b>684,626</b>	<b>96</b>	<b>705</b>	<b>801</b>	<b>692,161</b>

Table 340.—Number of Wage-Earners in the Sand and Gravel Industry in Canada, by Months and by Provinces, 1923

Month	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
January.....		10	26	197	4	2		34	273
February.....		10	22	230	4	2		34	302
March.....	9	1	35	247	4	2	1	38	337
April.....	22	1	49	346	16	5	1	44	484
May.....	31	1	69	415	23	5	13	42	599
June.....	30	1	82	463	23	5	40	42	686
July.....	30	1	92	462	25	5	40	46	701
August.....	27	1	98	457	25	5	41	43	697
September.....	36	1	96	474	20	4	41	42	714
October.....	41	1	102	443	17	4	32	43	683
November.....	29	1	95	346	12	2	15	42	542
December.....	18	1	55	246	4	2	1	37	364
<b>Average.....</b>	<b>37</b>	<b>10</b>	<b>83</b>	<b>481</b>	<b>19</b>	<b>5</b>	<b>29</b>	<b>41</b>	<b>705</b>

**Table 341.—Miscellaneous Expenses in the Sand and Gravel Industry in Canada by Provinces, 1922 and 1923**

Province	1922	1923
	\$	\$
Nova Scotia.....	4,595	4,130
New Brunswick.....	201	38
Quebec.....	20,773	11,732
Ontario.....	309,954	187,473
Manitoba.....	53,579	25,558
Saskatchewan.....	3,051	2,427
Alberta.....	14,292	14,830
British Columbia.....	38,777	24,366
<b>Canada.....</b>	<b>445,222</b>	<b>270,554</b>

**STONE**

Operations in the stone-quarrying industry in Canada in 1923 were carried on by 153 firms. The number of producers in each province was as follows: Nova Scotia, 9; New Brunswick, 12; Quebec, 50; Ontario, 75; Manitoba, 3; and British Columbia 9. During the year under review, 106 deposits of limestone, 43 of granite, 1 of marble, 6 of sandstone and 2 of slate, were operated.

The statistics collected under mineral production for the stone industry are confined to quarrying operations and stone-dressing works conducted in conjunction with the quarry. It must be borne in mind when reviewing the tabulated statistics for this industry that there is a considerable quantity of stone quarried by farmers, etc., for local foundation and concrete work, of which no accurate general information can be obtained.

**Table 342.—Principal Statistics Relating to the Stone Quarrying Industry in Canada, 1920-1923**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	168	(a)	3,487	3,302,253	(a)	(a)	7,580,351
1921.....	145	11,138,035	2,067	2,017,272	141,442	2,369,130	6,343,696
1922.....	162	13,004,233	2,859	2,673,241	167,139	1,259,552	5,989,864
1923.....	158	13,725,677	2,850	2,665,520	400,517	1,130,639	5,920,578

(a) Data not available.

**Table 343.—Capital Employed in the Stone Quarrying Industry in Canada, by Provinces, 1922 and 1923**

Province	1922				1923			
	Capital employed as represented by			Total	Capital employed as represented by			Total
	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable		Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	1,089,519	31,277	7,333	<b>1,128,129</b>	1,090,694	36,090	14,166	<b>1,140,950</b>
New Brunswick...	68,160	6,908	4,212	<b>79,280</b>	116,406	22,084	21,260	<b>159,750</b>
Quebec.....	4,269,234	278,080	694,900	<b>5,242,214</b>	3,804,242	246,153	526,406	<b>4,576,801</b>
Ontario.....	5,144,976	239,651	582,593	<b>5,967,220</b>	6,398,215	259,625	427,251	<b>7,085,091</b>
Manitoba.....	154,820	1,000	20,000	<b>175,820</b>	210,906	6,184	45,435	<b>262,525</b>
Alberta.....	1,800	100	300	<b>2,200</b>				
British Columbia..	330,814	12,832	65,724	<b>409,370</b>	350,837	29,725	119,993	<b>500,560</b>
<b>Canada.....</b>	<b>11,059,323</b>	<b>569,848</b>	<b>1,375,062</b>	<b>13,004,233</b>	<b>11,971,300</b>	<b>599,861</b>	<b>1,154,516</b>	<b>13,725,677</b>

Table 344.—Employees, Salaries and Wages in the Stone Quarrying Industry in Canada, by Provinces, 1922 and 1923

Occupation	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	British Columbia	Canada
1922							
<b>SALARIED EMPLOYEES—</b>							
No. ....	5	7	60	45	2	9	123
Superintendents and managers.....Salaries \$	5,900	7,864	129,833	103,327	3,414	22,341	272,679
No. ....	4	.....	12	7	.....	.....	23
Technical employees.....Salaries \$	1,343	.....	21,815	8,427	.....	.....	31,585
No. ....	3	.....	31	22	2	1	59
Clerks, stenographers, etc.....Salaries \$	1,390	.....	30,086	20,269	1,546	240	53,531
No. ....	12	7	103	74	4	10	210
Total.....Salaries \$	8,633	7,864	181,734	132,023	4,960	22,581	357,795
No. ....	124	74	1,376	846	61	163	*2,649
WAGE-EARNERS .....Wages \$	56,624	47,172	1,184,817	800,694	47,467	174,194	*2,315,446
<b>Total—Employees</b> .....	<b>136</b>	<b>81</b>	<b>1,479</b>	<b>920</b>	<b>65</b>	<b>173</b>	<b>*2,859</b>
<b>Salaries and wages</b> .... \$	<b>65,257</b>	<b>55,036</b>	<b>1,366,551</b>	<b>932,717</b>	<b>52,427</b>	<b>196,775</b>	<b>*2,673,241</b>
1923							
<b>SALARIED EMPLOYEES—</b>							
No. ....	3	6	52	38	4	9	112
Superintendents and managers.....Salaries \$	6,800	6,640	100,513	88,966	10,306	22,135	235,360
No. ....	3	.....	9	3	.....	.....	15
Technical employees.....Salaries \$	2,500	.....	11,480	15,600	.....	.....	29,580
No. ....	2	2	31	35	2	2	74
Clerks, stenographers, etc.....Salaries \$	956	1,500	31,826	41,950	1,469	1,800	79,501
No. ....	8	8	92	76	6	11	201
Total.....Salaries \$	10,256	8,140	143,819	146,516	11,775	23,935	344,441
No. ....	138	107	1,241	963	63	137	2,649
WAGE-EARNERS.....Wages \$	89,447	70,685	1,102,923	853,173	69,043	135,808	2,321,079
<b>Total—Employees</b> .....	<b>146</b>	<b>115</b>	<b>1,333</b>	<b>1,039</b>	<b>69</b>	<b>148</b>	<b>2,850</b>
<b>Salaries and wages</b> .... \$	<b>99,703</b>	<b>78,825</b>	<b>1,246,742</b>	<b>999,689</b>	<b>80,818</b>	<b>159,743</b>	<b>2,665,520</b>

\* Includes 5 wage-earners receiving \$4,478 in Alberta.

Table 345.—Miscellaneous Expenses Incurred in the Stone Quarrying Industry in Canada, by Provinces, 1922 and 1923

Province	1922	1923
	\$	\$
Nova Scotia.....	34,777	40,013
New Brunswick.....	11,716	31,710
Quebec.....	590,347	423,822
Ontario.....	566,760	559,432
Manitoba.....	11,042	30,851
Alberta.....	204	.....
British Columbia.....	44,706	44,811
<b>Canada</b> .....	<b>1,259,552</b>	<b>1,130,639</b>



## PART THREE

### DIRECTORY

In the following pages the names and addresses of all the principal operators in the Canadian mineral industry are given, and the location of the properties worked in 1923 is also shown.

## METALLIC MINERAL INDUSTRIES

## The Auriferous Quartz Mining Industry

Name of Operator	Address	Name of Mine	Location of Mine
NOVA SCOTIA			
*Bradford Mines, Ltd.	20 Broad St., New York.	Bradford.	Halifax Co.
*Central Mining and Development Co.	111 Almon St., Halifax.	Church.	Hants Co.
*Clark Gold Mines Corporation.	P.O. Box 484, Halifax.	Montague.	Halifax Co.
*Donaldson Bros.	Enfield.	Columbia.	Halifax Co.
*Hall and Hildey.	Cariboo Gold Mines.	Bessie A. Hall.	Halifax Co.
*Hiseler and Emmet.	60 Edward St., Halifax.	Fisk Block.	Queens Co.
*Inglis and Ramey.	Gottingen St., Halifax.	I.X.L.	Hants Co.
Joseph Lenihan.	1749 Hower Av. E. Cleveland, Ohio.	Malaga.	Queens Co.
*Malaga Gold Mines.	Malaga.	Malaga.	Queens Co.
Sherbrooke Mines and Power Co.	Goldenville.	Sherbrooke.	Guysboro Co.
ONTARIO			
<i>Kirkland Lake Area—</i>			
*Bidgood Gold Mines, Ltd.	Haileybury.	Bidgood.	Lebel Tp.
*Canadian Kirkland Gold Mining Co.	Haileybury.	Canadian Kirkland.	Teck Tp.
*Hunton Kirkland Gold Mines, Ltd.	Haileybury.		Kirkland Lake.
*King Kirkland Gold Mines, Ltd.	33 Richmond St. W., Toronto.	King Kirkland.	Lebel Tp.
*Kirkland Gateway Gold Mines, Ltd.	Swastika.	Kirkland Gateway.	Teck Tp.
Kirkland Lake Gold Mining Co., Ltd.	810 Lumsden Bldg., Toronto.	Kirkland Lake.	"
Kirkland Lake Proprietary (1919), Ltd.	Kirkland Lake.	Tough Oakes.	"
Lake Shore Mines, Ltd.	Kirkland Lake.	Burnside.	Lebel Tp.
*Montreal Ontario Gold Mines, Ltd.	Kirkland Lake.	Lake Shore.	Teck Tp.
*Queen Lebel Gold Mines, Ltd.	Kitchener.	Queen Lebel.	Lebel Tp.
Teck Hughes Gold Mines, Ltd.	Kirkland Lake.	Teck Hughes.	Lebel Tp.
Wright-Hargreaves Mines, Ltd.	Bridgeburg.	Wright-Hargreaves.	Teck Tp.
<i>Boston Creek Area—</i>			
*Barry-Hollinger Gold Mines, Ltd.	Boston Creek.	Barry-Hollinger.	Pacaud Tp.
Gold Hill Mining Co.	Haileybury.	Gold Hill.	Catherine Tp.
<i>Larder Lake Area—</i>			
*Argonaut Gold, Ltd.	Dane.	Argonaut.	Gauthier Tp.
*Crown Reserve Mining Co., Ltd.	Larder Lake.	Pancake.	Larder Lake.
<i>Lightning River Area—</i>			
Blue Quartz Gold Mines Ltd.	Toronto.	Blue Quartz.	Painkiller Lake.
*Hattie Gold Mines, Ltd.	Matheson, P.O.	Hattie.	Coulson Tp.
*Lightning River Gold Mines	Kirkland Lake.	Lightning River.	Holloway Tp.
<i>Northwestern Ontario Area—</i>			
*British Canadian Mines, Ltd.	8 Bloor St. E., Toronto.	Foley.	Rainy River District.
Contact Bay Mines, Ltd.	120 Bay St., Toronto.	Contact Bay.	Van Horn Tp.
*Fenning Development Co.	Schreiber.		Thunder Bay District.
*Goudreau Gold Mines.	Toronto.	Goudreau.	Algoma Dist.
*Grace Mining Co., Ltd.	Fort Erie.	Grace.	Eagle Lake.
Schreiber Gold Mines, Ltd.	2 Colborne St., Toronto.	Schreiber.	Thunder Bay District.
<i>Porcupine Area—</i>			
Barlow and Faulkenham.	Matheson.	L. 9266.	Munro Tp.
*Beaumont Gold Mines, Ltd.	1601 Royal Bank Bld., Toronto.	Beaumont.	Tisdale Tp.
*Canadel Gold, Ltd.	Box G. Timmins.	Canadel.	Tisdale and Whitney Tp.
*Canadian Gold Mines Corporation.	Timmins.		Tisdale Tp.
Clifton Porcupine Mines, Ltd.	South Porcupine.	Clifton.	Deloro Tp.
*Consolidated West Dome Mines, Ltd.	Bk of Hamilton Bldg., Toronto.	(Dome Lake).	Tisdale Tp.
		(West Dome).	
Croesus Gold Mines.	Cobalt.	Croesus.	Munro Tp.
Dome Mines Company, Ltd.	South Porcupine.	Dome.	Tisdale Tp.
*Hayden Gold Mines Co., Ltd.	Buffalo.	Hayden.	Deloro Tp.
Hollinger Consolidated Gold Mines, Ltd.	Timmins.	Hollinger.	Tisdale Tp.
Huddleston, J.	South Porcupine.		Cody Tp.
*Kerr Lake Mining Co., Ltd.	Cobalt.	Goldale.	Tisdale Tp.
*March Gold, Ltd.	South Porcupine.	March Gold.	Deloro Tp.
McIntyre Porcupine Mines, Ltd.	602 Standard Bank Bldg., Toronto.	McIntyre.	Tisdale Tp.
*Night Hawk Peninsula Mines, Ltd.	Connaught Station.	Night Hawk.	Cody Tp.
*North Crown Porcupine Mines, Ltd.	Larder Lake.	North Crown.	Tisdale Tp.
*Porcupine Davidson Gold Mines, Ltd.	4-5 King Edward Hotel, Toronto.	Davidson.	Tisdale Tp.
Porcupine Paymaster Mines, Ltd.	South Porcupine.	Paymaster.	Deloro Tp.
*Thomas Gold Mining Co.	c/o Drummond Bldg., Toronto.	Thomas.	Thomas Tp.
Vipond Consolidated Mines, Ltd.	Timmins.	Vipond.	Tisdale Tp.
<i>Sudbury Area—</i>			
*Buckingham Mines, Ltd.	West Shining Tree.	Buckingham.	Asquith Tp.
*Ribble Mines, Ltd.	404 C.P.R. Bldg., Toronto.	Wasapika.	Shining Tree.
*Thesaurus Gold Mines, Ltd.	Bank of Hamilton Bldg., Toronto.	Thesaurus.	Baden Tp.
*West Tree Mines, Ltd.	1576 King St. W., Toronto.	West Tree.	MacMurphy Tp.
White Rock Mining Co., Ltd.	Sudbury.	White Rock.	MacMurphy Tp.

\*Operating but not producing.

## The Auriferous Quartz Mining Industry—Concluded

Name of Operator	Address	Name of Mine	Location of Mine
<b>MANITOBA</b>			
*Bingo Gold Mines, Ltd.....	Winnipeg.....	Bingo.....	Pas Dist.
*Forty Nine Gold Mines, Ltd.....	Pas.....	Rex.....	Pas Dist.
Lake Superior Metals Co.....	c/o J. W. Harris, Masonic Temple, Winnipeg.....	Gold Pan.....	Rice Lake.
<b>BRITISH COLUMBIA</b>			
*Fairview Mining Co.....	Fiaview.....	Susie.....	Yale.
*Forty Nine Mining Co., Ltd.....	Rogers Bldg., Vancouver.....	Forty Nine.....	Portland Canal.
*Foster Matt.....	Remount.....	Veritas.....	Lilloet Mining Dist.
Fraser, N.....	Anyox.....	Esperanza.....	Nass River.
Hedley Gold Mining Co., Ltd.....	Hedley.....	Nickel Plate.....	Similkameen.
I.X.L. Mining and Milling Co.....	Kimberley.....	I.X.L.....	Rossland.
*Kitselas Mountain Copper Co., Ltd.....	Usk.....	Cordillera.....	Omineca.
MacKinnon, Margaret D.....	Rossland.....	Golden Drip.....	Kootenay.
Norcross, D. H.....	P.O. Box 296, Nelson.....	Granite.....	Nelson.
*Nugget Gold Mines Ltd.....	Vancouver.....	Nugget.....	Salmo.
Premier Gold Mining Co., Ltd.....	Premier.....	Premier.....	Skeena.
*Texas Yankee Girl Mining Co.....	Ymir.....	Yankee Girl.....	Kootenay.
*Windpass Gold Mining Co.....	Box 1024, Fernie.....	Windpass.....	Yale.....

## Chromite Industry

Name of Operator	Address	Name of Mine	Location of Mine
<b>QUEBEC</b>			
Quebec Chrome Corp.....	Black Lake.....	.....	Coleraine.

## The Copper-Gold-Silver Mining Industry

Name of Operator	Address	Name of Mine	Location
<b>QUEBEC</b>			
Eustis Mining Company.....	Eustis.....	Eustis.....	Ascot.
<b>ALBERTA</b>			
*Eldon Mines, Ltd.....	205 Dominion Bk. Bldg., Calgary.....	Eldon.....	.....
<b>BRITISH COLUMBIA</b>			
Belmont Surf Inlet Mines, Ltd.....	Surf Inlet.....	Surf Inlet.....	Skeena District.
Britannia Mining and Smelting Co.....	Britannia Beach.....	Britannia.....	Vancouver Is.
Coast Copper Co., Ltd.....	703 Biras Bldg., Vancouver.....	Old Sport Merry Widow	Vancouver Is.
Consolidated Mining & Smelting Co. of Canada, Ltd.....	Rossland.....	Rossland Group.....	West Kootenay, Nelson Division.
*Dome Mountsin Gold Mining Co., Ltd.....	Telkwa.....	Dome Mt.....	.....
*Gabbro Copper Mines, Ltd.....	415 Sayward Bldg., Victoria.....	Gabbro.....	Jordan River District, Victoria Division.
Granby Consolidated Mining, Smelting and Power Co., Ltd.....	Anyox.....	Hidden Creek Group....	Observatory Inlet, Nass Division.
Kamloops Copper Co.....	Duluth, Minn.....	Iron Mask.....	Kamloops Division.
*Kickbush, F. C.....	Chilliwack.....	Empire.....	Lilloet District.
Maid of Erin Silver Mining Co., Ltd....	Haines, Alaska.....	Maid of Erin.....	Rainy Hollow, Atlin Division.
Princeton Mining and Development Co.	Princeton.....	.....	Similkameen Dis*.
Tidewater Copper Co.....	619 Alaska Bldg., Seattle, Wash.....	Indian Chief.....	Sidney Inlet, Clayoquot Division.
Woodworth, J. B.....	Thorley Park, Vancouver.....	Yew.....	Vancouver Is.

\*Operating but not shipping.

## Iron Mining Industry

Name of Operator	Address	Name of Mine	Location
QUEBEC			
Baie St. Paul Titanic Iron Ore Co.....	Baie St. Paul.....	Glen.....	St. Urbain.
ONTARIO			
Moose Mountain, Ltd.....	Sellwood.....		Sellwood.
BRITISH COLUMBIA			
Pacific Coast Steel Co.....	Van Anda.....	Good Hope.....	Van Anda.

## Manganese Industry

NOVA SCOTIA			
Aylesford Manganese Mg. Co.....	Aylesford.....		Nicholsville.
NEW BRUNSWICK			
Thompson, F. M.....	Hillsborough.....	Dawson.....	Albert Co.

## Nickel-Copper Mining Industry

Name of Operator	Address	Name of Mine	Location
ONTARIO			
British America Nickel Corp., Ltd.....	Ottawa.....	Murray.....	Nickelton.
International Nickel Co. of Canada, Ltd.....	67 Wall St., New York.....	Creighton.....	Sudbury.
Mond Nickel Co., Ltd.....	Coniston.....	Worthington and Levaek	Drury and Levaek Tp.

## The Silver-Cobalt Mining Industry

Name of Operator	Address	Name of Mine	Location
ONTARIO			
*Canadian Lorrain Silver Mines, Ltd....	Haileybury.....	Canadian Lorrain.....	South Lorrain.
Coniagas Mines, Ltd.....	50 Ontario St., St. Catharines.	/Coniagas.....	Coleman Tp.
		Beaver.....	"
Crown Reserve Mining Co., Ltd.....	Larder Lake.....	Crown Reserve.....	"
Galvin, M. J.....	Sandwich.....	Mother Lode.....	James Tp.
Genesee Mining Co., Ltd.....	Cobalt.....	Genesee.....	Coleman Tp.
Keeley Silver Mines, Ltd.....	Haileybury.....	Keeley.....	South Lorrain.
Kerr Lake Mining Co., Ltd.....	Cobalt.....	Kerr Lake.....	Coleman Tp.
La Rose Mines, Ltd.....	Cobalt.....	La Rose.....	"
McKinley-Darragh-Savage Mines of Co- balt, Ltd.....	Cobalt.....	McKinley-Darragh-Sav- age.....	"
McLeod, J. H.....	Box 156, Cobalt.....	Foster.....	Coleman Tp.
Menago Mining Co., Ltd.....	Sudbury.....	Colonial.....	"
		Farah.....	"
Mining Corporation of Canada, Ltd....	1512 Bank of Hamilton Bldg., Toronto.....	/Townsite.....	"
		City of Cobalt.....	"
Nipissing Mining Co., Ltd.....	Cobalt.....	Peterson Lake.....	"
O'Brien, M. J., Ltd.....	Cobalt.....	Nipissing.....	"
		O'Brien.....	"
*Oxford Cobalt Silver Mines, Ltd.....	Woodstock.....	Miller-Lake-O'Brien.....	Gowganda.
Penn Canadian Mines, Ltd.....	1011 Chestnut St., Philadel- phia.....	Oxford Cobalt.....	Gillies.
Sweet, Joe.....	Cobalt.....	Penn Canadian.....	Cobalt.
Tretheway Silver-Cobalt Mines, Ltd....	Standard Bank Bldg., Toronto	Silver Queen.....	Coleman Tp.
		Castle.....	Gowganda.

\*Operating but not shipping.

## The Silver-Lead-Zinc Industry

Name of Operator	Address	Name of Mine	Location
<b>QUEBEC</b>			
Federal Zinc and Lead Co.....	602 Drummond Bldg., Montreal	Federal.....	Gaspé.
Tétreault Mines.....	730 Delorimier Ave., Montreal	Tétreault.....	Notre-Dame des Anges.
<b>ONTARIO</b>			
Kingdon Mining, Smelting and Manufacturing Co., Ltd.....	Galetta.....	Kingdon.....	Galetta.
<b>BRITISH COLUMBIA</b>			
<i>Ainsworth Mining Division—</i>			
Burgess, W. H.....	Kaslo.....	Whitewater.....	Retallack.
Bridge and Kennedy.....	Ainsworth.....	Silver Hoard.....	Ainsworth.
Cork-Province Mines, Ltd.....	Kaslo.....	Cork-Province.....	Zwicky.
Florence Silver Mining Co., Ltd. (D. E. Sanders).....	518 Sutton Blk., Spokane, Wash.....	Florence.....	Ainsworth.
Foulkes, G. and Roberts.....	Kaslo.....	Dublin.....	Zwicky.
Giegerich, H.....	Kaslo.....	Maestro.....	Ainsworth.
*Green and Green.....	Kaslo.....	Silver Bell.....	Kaslo Creek.
Krao Silver Lead Mg. Co.....	Kaslo.....	Krao.....	Ainsworth.
Howser Mining Co.....	Howser.....	Howser.....	Howser.
McCreedy, G. E.....	Zincton.....	Caledonia.....	Blaylock.
McPherson and Sherman.....	Ainsworth.....	Spokane-Trinket.....	Ainsworth.
		Neosho.....	"
Washington Mine, Ltd.....	Kaslo.....	Washington, Noonday, Pegleg, Liberty, Silver Bear, Tariff, R. E. Lee, Bonton, Elkhorn, Isaac, Nip and Tuck, Park, Steele, St. Eugene.....	Rambler.
<i>Atlin Mining Division—</i>			
Atlin Silver-Lead Mines (J. M. Ruffner).....	Atlin.....	Ruffner Gp.....	Atlin.
<i>Fort Steele Mining Division—</i>			
Consolidated Mining and Smelting Co. of Canada, Ltd.....	Kimberley.....	Sullivan.....	Kimberley.
<i>Golden and Windermere Division—</i>			
Bruce, R. Randolph.....	Invermere.....	Paradise.....	Toby Creek.
<i>Grand Forks Mining Division—</i>			
Williams, Wm.....	Edgewood.....	Lightning Peak.....	Grand Forks.
<i>Greenwood Mining Division—</i>			
Barrett, G. M.....	Beaverdell.....	Revenge Group.....	Beaverdell.
*Jack Paul Mining Co.....	610 Hutton Blk., Spokane, Wash.....	Riverside.....	Greenwood.
McKellar and Cunningham.....	Greenwood.....	Bounty Fraction.....	Yale.
Paton, J. N. (McIntosh & Crane).....	Beaverdell.....	Bell.....	Wallace Mountain.
Rambo, W. H.....	Beaverdell.....	Standard Fraction.....	Wallace Mountain.
Wallace Mountain Mines, Ltd.....	Box 176, Penticton.....	Sally Group.....	Beaverdell.
<i>Nelson and Arrow Lake Mining Divisions—</i>			
Consolidated Mining and Smelting Co. of Canada, Ltd. (to lessee).....	Trail.....	Molly Gibson.....	Kokanee Creek.
*Forster, H. E.....	Wilmer.....	Millie Mack, Granite, Kootenay, Belle, Waterloo.....	Cariboo Creek.
Turner, W. J.....	Salmo.....	Emerald.....	Salmo.
West Kootenay Land Co.....	Salmo.....	Silver Dollar.....	"
<i>Omineca Mining Division—</i>			
Duthie, J. F. (John R. Turner).....	Smithers.....	Henderson.....	Hudson Bay Mtn.
<i>Slocan and Slocan City Mining Divisions—</i>			
American Boy Mining Co.....	Sandon.....	American Boy.....	Sandon.
Byrne, M. J.....	Sandon.....	Gem.....	Carpenter Creek.
Cartwright, C. E.....	502 North West Bldg., Vancouver.....	Black Prince & Two Friends.....	Lemon.
Clark & Mann.....	Sandon.....	Carnation.....	Sandon.
Clever, H.....	New Denver.....	Mollie Hughes.....	New Denver.
Cunningham, C.....	Alamo.....	Alamo, Eureka Hewitt, Idaho, Queen Bess, Richmond, Sovereign, Wonderful, Van R.....	Alamo.
Dunsmuir & Sons (Paul Lincoln).....	Sandon.....	Noble Five.....	Sandon.
Edwards, Frank.....	New Denver.....	Mountain Chief, Mammoth.....	New Denver.
Galena Mining and M. Co.....	Silverton.....	Galena Farm.....	Silverton.
Long and Buchanan.....	Slocan.....	Meteor.....	Slocan.
MacAuley & McFarlane.....	Sandon.....	Metallic.....	Slocan.
		Payne.....	Sandon.
		Ore-Bin.....	"
O'Neil, D. B.....	Slocan.....	L. T. Group.....	Slocan.
Ottawa Mining & Milling Co.....	Slocan.....	Ottawa.....	"
Peterson Bros.....	Sandon.....	Black Colt.....	Sandon.
Petty, Geo.....	Sandon.....	Lone Bachelor Victor.....	Sandon.
Brandon, Jos.....	Sandon.....	Bon Ton.....	Sandon.

## The Silver-Lead-Zinc Industry—Concluded

Name of Operator	Address	Name of Mine	Location
<b>BRITISH COLUMBIA—Concluded</b>			
Rambler-Cariboo Mines, Ltd. (W. A. Cameron).....	New Denver.....	Rambler-Cariboo.....	Three Forks.
Rosbery-Surprise Mining Co., Ltd.....	New Denver.....	Bosun.....	New Denver.
Rosbery-Surprise Mining Co., Ltd. (Lessees)	New Denver.....	(Monitor).....	Three Forks.
Silversmith Mines, Ltd.....	Box 1772, Spokane, Wash.....	(Surprise).....	Sandon.
*Slocan Silver Mines, Ltd.....	Alamo.....	Silversmith.....	Sandon.
Soho Consolidated Mines, Ltd.....	Spokane, Wash.....	McAllister.....	Three Forks.
Standard Silver-Lead Mining Co.....	Silverton.....	Soho.....	Carpenter Creek.
Sunderland, J. B.....	Vancouver.....	Standard.....	Silverton.
Zimmerman, Kurt.....	Slocan City.....	Ruth.....	Sandon.
		Anna.....	Springer Creek.
<b>Trail Creek, Trout Lake, Revelstoke &amp; Lardeau Mining Divisions—</b>			
*Multiplex Mining Co.....	Box 436, Revelstoke.....	Multiplex.....	Camborne.
Waverley Mines Co.....	Albert Canyon.....	Waverley.....	Revelstoke.
Williamson, E.....	West Bridge.....	Donkey, Crescent, No-doway, Shipper, Octogan, Preston, Providence, Revenge.....	Kettle River.
<b>YUKON</b>			
Keno Hill, Ltd.....	120 Broadway, New York....	Keno Hill.....	Keno Hill, Mayo Division.
McKay, Erickson and Bouvette.....	Keno Hill.....	Shamrock.....	" "
Silver King and Queen Mg. Co.....	Mayo.....	(Silver King).....	" "
Treadwell Yukon Co., Ltd.....	Crocker Bldg., San Francisco, Cal.....	(Silver Queen).....	" "
		Ladue.....	" "

## Canadian Smelters and Refineries

Name of Operator	Address	Location
<b>ONTARIO</b>		
British America Nickel Corp.....	Jackson Bldg., Ottawa.....	Nickelton, Ont., and Deschênes, Que.
Cobalt Reduction Co. (Mining Corp. of Canada.).....	Cobalt.....	Cobalt.
Coniagas Reduction Co.....	St. Catharines.....	Thorold.
Deloro Smelting & Refining Co.....	Deloro.....	Deloro.
International Nickel Co. of Can.....	67 Wall St., New York.....	Copper Cliff.
Kingdon Mining, Smelting and Power Co.....	Galetta.....	Galetta.
Mond Nickel Co.....	Coniston.....	Coniston.
Nipissing Mining Co.....	Cobalt.....	Cobalt.
<b>BRITISH COLUMBIA</b>		
Consolidated Mining and Smelting Co..	Trail.....	Trail, Rossland, Kimberley.
Granby Consolidated Mining, Smelting and Power Co.....	Anyox.....	Anyox.

\*Operating but not shipping.

NOTE.—Ontario reported only one company and Quebec two which are included among the operators given above.

In the Yukon Territory development operations were carried on by many individual operators and by a few incorporated companies in the Keno Hill area.

## NON-METALLIC MINERAL INDUSTRIES

## Actinolite Mining Industry

Name	Address	Location
The Actinolite Mining Co., Ltd.....	Bloomfield, N.J.....	Kaladar Township, Ont.

## Asbestos Mining Industry

Name	Address	Name of Mine	Location of Mine
<b>QUEBEC—</b>			
Asbestos Corporation of Canada, Ltd.	Canada Cement Bldg., Montreal.....	King.....	Thetford Tp.
		Beaver.....	Coleraine Tp.
		British Canadian.....	
Asbestos Mines, Ltd.....	282 St. Catherine St., Montreal	Fraser.....	Broughton Tp.
Bennett-Martin Asbestos and Chrome Mines Ltd.....	Thetford Mines.....	Boston.....	Broughton Tp.
Black Lake Asbestos and Chrome Co., Ltd.....	282 St. Catherine St., Montreal	Vimy Ridge	Ireland Tp.
		Thetford.....	Thetford Tp.
Canadian Johns-Manville Co., Ltd....	450 St. James St., Montreal....	Union.....	Coleraine Tp.
Consolidated Asbestos, Ltd.....	Phillips Square, Montreal.....	Imperial.....	Coleraine Tp.
Federal Asbestos Co.....	Phillips Square, Montreal.....	Southward.....	Coleraine Tp.
Johnson's Company.....	Thetford Mines.....	Jeffrey.....	Shipton Tp.
		Thetford.....	Thetford Tp.
Keasbey and Mattison Co.....	Ambler, Penn., U.S.A.....	Federal.....	Thetford Tp.
Maple Leaf Asbestos Corp., Ltd.....	Thetford Mines.....	Johnson's.....	Thetford Tp.
Pennington Asbestos Co.....	Thetford Mines.....	Johnson's.....	Coleraine Tp.
Quebec Asbestos Corporation.....	East Broughton.....	Bell.....	Thetford Tp.
<b>ONTARIO—</b>			
Bowman Asbestos Mines.....	116 Dominion Express Bldg., Montreal, Que.	Maple Leaf.....	Coleraine Tp.
		Pennington.....	Thetford Tp.
		Quebec.....	Broughton Tp.
			Deloro Tp.

## Barytes Mining Industry

Name	Address	Location
Brandram-Henderson, Ltd.....	Montreal, P.Q.....	Lake Ainslie, Inverness County, N.S.

## The Coal Mining Industry\*

Name of Operator	Address	Location of Mine
<b>NOVA SCOTIA—</b>		
		<i>District</i>
Acadia Coal Co.....	Stellarton.....	Pictou.
Anglo Coal Co., Ltd.....	Box 100, Glace Bay.....	Cape Breton.
Athol Coal Co., Ltd.....	Athol.....	Cumberland.
Bras d'Or Coal Co.....	Little Bras d'Or Bridge.....	Cape Breton.
Carter Coal Co.....	Box 68, Amherst.....	Cumberland.
Coastal Coal Co.....	Sydney Mines.....	Cape Breton.
Cumberland Railway and Coal Co.....	Sydney.....	Cumberland.
Dominion Coal Co., Ltd.....	Sydney.....	Cape Breton.
Emerson Coal Co., Ltd.....	16 Rupert St., Amherst.....	Cumberland.
Fundy Mining Co.....	49 Gottingen St., Halifax.....	Cumberland.
Greenwood Coal Co.....	Thorburn.....	Pictou.
Indian Cove Coal Co.....	Sydney Mines.....	Cape Breton.
Intercolonial Coal Mg. Co., Ltd.....	Westville.....	Pictou.
Inverness Ry. & Collieries, Ltd.....	Inverness.....	Inverness.
Lawson Coal Co.....	Maccan.....	Cumberland.
Maritime Coal, Ry. & Power Co., Ltd.....	Joggins Mines.....	Cumberland.
Minudie Coal Co., Ltd.....	River Hebert.....	Cumberland.
National Coal Co.....	New Glasgow.....	Cumberland.
Nova Scotia Steel and Coal Co.....	Sydney.....	Cape Breton.
Prentegast, Denis (formerly Port Hood Collieries)	Port Hood.....	Inverness.
Provincial Mining Co. (Twin Seam Coal Co.).....	Maccan.....	Cumberland.
River Hebert Coal Co., Ltd. (formerly Marsh Mine).....	River Hebert.....	Cumberland.
Sterling Coal Co.....	River Hebert.....	Cumberland.
Valley Coal Co.....	River Hebert.....	Cumberland.

## The Coal Mining Industry\*—Continued

Name of Operator	Address	Location of Mine
<b>NEW BRUNSWICK—</b>		<i>County</i>
Avon Coal Co., Ltd.	Box 940, St. John	Queens.
Coakley, M.	Minto.	Sunbury.
McDougal Bros.	Minto.	Queens.
Minto Coal Co., Ltd.	Minto.	Queens.
Miramichi Lumber Co.	Minto.	Queens.
Reade, L. W., c/o Grand Lake Coal Co.	768 Brunswick St., Fredericton	Sunbury.
Rothwell Coal Co., Ltd.	St. John	Queens.
Sheffield Coal Co.	Minto.	Queens.
Welton, Harvey & Wood	Minto.	Sunbury.
Welton & Henderson	Minto.	Queens.
<b>SASKATCHEWAN—</b>		<i>Municipality</i>
Bienfait Mine	Bienfait	Near Bienfait.
Big Lump Coal Co., Ltd.	Box 201, Estevan	Near Estevan.
Crescent Collieries, Ltd.	Bienfait	Near Bienfait.
Eastern Collieries of Bienfait	Estevan	Near Estevan.
Estevan Coal and Brick Co., Ltd.	Estevan	Estevan.
Lignite Coal Mines, Ltd.	501 McIntyre Block, Winnipeg, Man.	Near Taylorton.
Manitoba and Sask. Coal Co., Ltd.	503 Avenue Blk., Winnipeg, Man.	Bienfait.
Nice, A.	Estevan	Near Estevan.
Nicholson, H.	Estevan	Estevan.
Pierce-McCallum, Ltd.	Bienfait	Near Bienfait.
Shand Coal and Brick Co., Ltd.	Shand	Shand.
Western Dominion Collieries, Ltd.	305 Trust and Loan Bldg., Winnipeg, Man.	Taylorton.
Western Collieries, Ltd.	Roche Perce	Roche Perce.
<b>ALBERTA—</b>		<i>District</i>
<b>Anthracite—</b>		
Canadian Pacific Railway (Bankhead Mine)	Department of Natural Resources, Calgary	Banff.
<b>Bituminous—</b>		
Blue Diamond Coal Co., Ltd.	Brule Mines	Jasper Park.
Brazeau Collieries, Ltd.	Nordegg	Brazeau.
Cadomin Coal Co., Ltd.	282 Main Street, Winnipeg, Man.	Mountain Park.
Canmore Coal Co., Ltd.	Canmore	Canmore.
Hillcrest Collieries, Ltd.	Hillcrest	Crow's Nest Pass.
International Coal and Coke Co., Ltd.	Coleman	Crow's Nest Pass.
Luscar Collieries, Ltd.	Mountain Park	Mountain Park.
McGillivray Creek Coal & Coke Co.	Coleman	Crow's Nest Pass.
Mohawk Bituminous Mines, Ltd.	414 Lancaster Bldg., Calgary	Crow's Nest Pass.
Mountain Park Coal Co., Ltd.	708 Tegler Bldg., Edmonton	Mountain Park.
West Canadian Collieries, Ltd.	Blairmore	Crow's Nest Pass.
<b>Sub-Bituminous—</b>		
Acorn Coal Co., Ltd.	West Saunders	Saunders.
Alexo Coal Mining Co., Ltd.	Alexo	Saunders.
Balkan Coal Co., Ltd.	Robb, Mile 33, A.C.B.	Yellowhead Pass.
Big Horn and Saunders Creek Collieries	Saunders	Saunders.
Blackstone Coal Co., Ltd.	733 Tegler Bldg., Edmonton	Yellowhead Pass.
Coal Valley Mining Co., Ltd.	806 McLeod Bldg., Edmonton	Yellowhead Pass.
Estill, I. (Glacier Coal Co., Ltd.)	Lundbreck	Pincher Creek.
Foothills Collieries, Ltd.	222 Portage Ave., Winnipeg, Man.	Yellowhead Pass.
McLeod River Hard Coal Co., Ltd.	Coalspur	Yellowhead Pass.
Sterling Collieries, Ltd.	911 McLeod Bldg., Edmonton	Yellowhead Pass.
Superior Collieries, Ltd.	3 McDougall Court, Edmonton	Yellowhead Pass.
<b>Lignite—</b>		
Ajax Coal and Mining Co.	Medicine Hat	Medicine Hat.
Anderson, William John	Sheerness	Hanna.
Ardley Hardite Collieries, Ltd.	Ardley	Trochu.
Atlas Coal Co., Ltd.	Drumheller	Drumheller.
Big Valley Collieries	Box 34, Big Valley	Big Valley.
Bish Bros. & LeGear	Forestburg	Battle River.
Blackfoot Indian Agency	Gleichen	Gleichen.
Bush Mine Coal Co., Ltd.	Box 161, Beverley	Clover Bar.
Caledonian Collieries, Ltd.	Drumheller	Drumheller.
Canadian Coal Co., Ltd.	205 Quebec Bldg, Edmonton	Wayne.
Canadian Dinant Coal Co.	Dinant	Camrose.
Canadian Pacific Railway Co.	Dept. of Natural Resources, Calgary	Lethbridge, Taber.
Capital Collieries, Ltd.	Ardley	Wayne.
Carbon Coal Agencies	Carbon	Carbon.
Challenger Coal Co.	Ardley	Trochu.
Chinook Coal Co., Ltd.	117 Sherlock Blk., Lethbridge	Lethbridge.
City of Lethbridge Coal Mine	Lethbridge	Lethbridge.
Clover Bar Coal Mine Co., Ltd.	Box 180, Beverley	Clover Bar.
Crown Coal Co. (Penn. Mine Coal Co.)	1351-82nd Street, Edmonton	Edmonton.
Crown Reserve Coal Co.	Rosedale Station	Rosedale.
Dawson Coal Co., Ltd.	7 McDougall Court, Edmonton	Edmonton.
Dobell Coal Co., Ltd.	Box 140, Tofield	Tofield.
Donaldson, C. S. Coal Co.	Suite 1, Hill Blk., Lethbridge	Lethbridge.
Edmonton Collieries, Ltd.	1017-102 Street, Edmonton	Edmonton.
Elgin Coal Co., Ltd.	Drumheller	Drumheller.
Ellis Coal Co., Ltd.	Box 46, Three Hills	Three Hills.
Excelsior Collieries, Ltd.	Wayne	Wayne.
Fraser-Mackay Collieries, Ltd.	10055-101 St., Edmonton	Clover Bar.

## The Coal Mining Industry\*—Concluded

Name of Operator	Address	Location of Mine
<b>ALBERTA—Concluded</b>		
<b>Lignite—Con.</b>		
Gibson Collieries.....	Box 29, Drumheller.....	Drumheller.
Great West Coal Co., Ltd. (Black Diamond Mine)	10026-101 "A" Ave., Edmonton.....	Clover Bar.
Great West Coal Co., Ltd. (The Star Mine).....	Aerial.....	Rosedale.
Humberstone Coal Co., Ltd.....	Box 506, Beverley.....	Clover Bar.
Hy-Grade Coal Co., Ltd.....	Drumheller.....	Drumheller.
Ideal Coal Co., Ltd.....	28 Mackie Blk., Calgary.....	Wayne.
Jewel Collieries, The.....	Wayne.....	Wayne.
Keith and Fulton.....	Clover Bar.....	Clover Bar.
Kelly Collieries (formerly Namao Collieries, Ltd.).....	Namao.....	Namao.
Kleenbirt Collieries, Ltd.....	Eyremore.....	Brooks.
Lakeside Coals, Ltd.....	711 Tegler Bldg., Edmonton.....	Wabamun.
Lethbridge Coal Co., Ltd.....	Box 784, Lethbridge.....	Lethbridge.
Love and Fuller.....	Carbon.....	Carbon.
Majestic Coal Co., Ltd.....	Taber.....	Taber.
Marcus Coal Mines, Ltd.....	Clover Bar.....	Clover Bar.
McPeak Coal Co.....	112 Ave. & 76th St., Edmonton.....	Edmonton.
Midland Collieries, Ltd.....	Midlandvale.....	Drumheller.
Mid-West Collieries, Ltd.....	Box 387, Drumheller.....	Drumheller.
Moonlight Coal Co., Ltd.....	Rosedale Station.....	Rosedale.
Newcastle Coal Co., Ltd.....	Drumheller.....	Drumheller.
Newcastle Junior Mg. Co., Ltd.....	Drumheller.....	Drumheller.
North American Collieries, Ltd.....	809 Lancaster Bldg., Edmonton.....	Lethbridge, Pembina.
North Star Coal Co.....	Alix.....	Trochu.
North Star Coal Co. (formerly Tredway Coal Co.).....	Cardiff.....	Cardiff.
Olipphant, John.....	Medicine Hat.....	Medicine Hat.
Oscar Collieries, Ltd.....	Sheerness.....	Hanna.
Ottewell, R. P. Coal Mine.....	Clover Bar.....	Clover Bar.
Palisade Coal Co., Ltd.....	Three Hills.....	Three Hills.
Peerless Carbon Collieries, Ltd.....	Carbon.....	Carbon.
Premier Coal Co., Ltd.....	Drumheller.....	Drumheller.
Redcliff Brick & Coal Co., Ltd.....	Box 135, Redcliff.....	Medicine Hat.
Reed & Brown.....	11247-69 St., Edmonton.....	Edmonton.
Regal Collieries, Ltd.....	Taber.....	Taber.
Rock Springs Coal Co., (Co-operative Coal Co.)	Elcan.....	Taber.
Rosedale Coal Co., Ltd.....	Rosedale.....	Rosedale.
Rose Deer Coal Mining Co., Ltd.....	Wayne.....	Wayne.
Round Hill Collieries, Ltd., The.....	Round Hill.....	Camrose.
Shannon Coal Co.....	Carbon.....	Carbon.
Spicer Coal Co., Ltd.....	Dinant.....	Camrose.
Standard Coal Co.....	Wayne.....	Wayne.
Stoney Creek Collieries, Ltd.....	Camrose.....	Camrose.
Sunshine Coal Co., Ltd.....	Wayne.....	Wayne.
Thomas, I. D. Coal Co.....	Nacmine.....	Drumheller.
Tofield Coal Co., Ltd.....	Tofield.....	Tofield.
Vimy Coal, Light and Power Co.....	Big Valley.....	Big Valley.
Warneboldt, J.....	Sheerness.....	Hanna.
Western Commercial Co.....	Wayne.....	Wayne.
Western Gem Mining Co., Ltd.....	Drumheller.....	Drumheller.
<b>BRITISH COLUMBIA—</b>		
Canadian Collieries (Dunsmuir).....	600 Belmont Bldg., Victoria.....	Comox <sup>District</sup> Island.
Coalmont Collieries, Ltd.....	205 Yorkshire Bldg., Vancouver.....	Wellington)
Corbin Coal & Coke Co., Ltd.....	Corbin.....	Inland.
Crows Nest Pass Coal Co., Ltd.....	Fernie.....	Crows Nest.
Fleming Coal Co., Ltd.....	Merritt.....	Crows Nest.
Granby Cons. Mg. S. & P. Co.....	Cassidy, Vancouver Island.....	Inland.
Middlesboro Collieries, Ltd.....	Middlesboro.....	Inland.
Nanoose Wellington Coal Co.....	Wellington.....	Inland.
Princeton Coal & Land Co., Ltd.....	Princeton.....	Inland.
Western Fuel Corporation of Canada.....	Nanaimo.....	Inland.

\* Operators producing 500 tons or over per month.

## The Feldspar Industry

Name	Address	Location
<b>MINES—</b>		
<b>QUEBEC—</b>		
Cameron, J. H.....	Box 11, Buckingham.....	Buckingham Tp.
Gowan, William.....	Holland Mills.....	Portland Tp.
Mahoney and Rich.....	88 Bank St., Ottawa, Ont.....	Derry Tp.
O'Brien and Fowler.....	Bk. of Nova Scotia Bldg, Ottawa, Ont.....	Derry Tp.
Pednaud, G.....	Glen Almond.....	Buckingham Tp.
St. Lawrence Feldspar, Ltd.....	55 St. Francois Xavier St., Montreal.....	Saguenay Co.
Winning, Bush.....	N.D. de la Salette.....	Portland Tp.
<b>ONTARIO—</b>		
Anderson, J. H.....	Lucknow.....	Dryden Tp.
Craig, T. H.....	Verona.....	Portland Tp.
Crystalspar Co.....	Hartington.....	Portland Tp.

## The Feldspar Industry—Concluded

Name	Address	Location
<b>MINES—</b>		
<b>ONTARIO—Concluded</b>		
Federal Feldspar, Ltd.....	250 Slater St., Ottawa.....	Bedford Tp.
Feldspars, Ltd.....	293 Bay St., Toronto.....	Bedford, Portland and Loughborough Tps.
Feldspar Mines Corp., Ltd.....	Toronto.....	Monteagle Tp.
Feldspar Quarries, Ltd.....	60 Front St., Toronto.....	Portland Tp.
Geddes, W. J.....	Verona.....	Portland Tp.
Genesee Feldspar Co.....	32 Augustine St., Rochester, N.Y.....	Monteagle Tp.
McQuire, H. F.....	Parry Sound.....	Conger Tp.
Orser-Kraft Feldspar, Ltd.....	563 William St., Buffalo, N.Y., U.S.A.	Bathurst Tp.
Perth Feldspar & Mining Co., Ltd.....	Perth.....	Bathurst Tp.
Rock Products Co.....	Nicholas Bldg., Toledo, Ohio, U.S.A.	Loughborough Tp.
Treadwell, W. G.....	Hartington.....	Chapman Tp.
Woods, W. B.....	Wheeling, W. Va., U.S.A.....	
<b>MILLS—</b>		
Feldspar Milling Co., Ltd.....	33 Richmond St. W., Toronto.....	Toronto, Ont.
Frontenac Floor and Wall Tile Co., Ltd.....	Kingston.....	Kingston, Ont.

## The Fluorspar Industry

Name	Address	Location
<b>ONTARIO—</b>		
Cross and Wellington.....	Madoc.....	Huntingdon Township.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining & Smelting Co. of Canada, Ltd.....	Trail, B.C.....	Grand Forks Division.

## Garnets

Name	Address	Location
Bancroft Mines Syndicate.....	18 Toronto St., Toronto.....	Renfrew Co.

## The Graphite Industry

Name	Address	Location
<b>QUEBEC—</b>		
Canadian Graphite Corporation.....	Montreal.....	Boyer Township.
Quebec Graphite Co., Ltd.....	4 Fenchurch, London, E.C.....	Lochaber Township.
<b>ONTARIO—</b>		
Black Donald Graphite Co., Ltd.....	Calabogie, Ont.....	Brougham Township.

## The Grindstone Industry

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Mic-Mac Grindstone Co., Ltd.....	Woodburn.....	Woodburn.
<b>NEW BRUNSWICK—</b>		
The Miramichi Quarry Co., Ltd.....	Quarryville.....	Quarryville.
The Read Stone Co., Ltd.....	Sackville.....	Stonehaven.

## The Gypsum Industry

Name	Address	Location
<b>NOVA SCOTIA—</b>		
DeWolfe, George W.....	Three Mile Plains.....	Hants Co.
Higginson Manufacturing Co.....	Newburg, N.Y.....	Newport Station, Hants Co.
International Gypsum Corp., Ltd.....	31 Milk St., Boston, Mass.....	Cheticamp, C.B.
Iona Gypsum Products Co., Ltd.....	Box 37, Sydney.....	Iona.
Newark Plaster Co.....	Ottawa Brook.....	Ottawa Brook, Victoria Co.
Rock Plaster Corp.....	40 Rector St., New York, N.Y.....	Walton, Hants Co.
St. Croix Gypsum Milling & Mfg. Co., Ltd.....	St. Croix.....	St. Croix, Hants Co.
Wentworth Gypsum Co., Ltd.....	Windsor.....	Wentworth, Hants Co.
Windsor Gypsum Co.....	Newburgh, N.Y.....	Windsor, Hants Co.
Windsor Plaster Co., Ltd.....	Windsor.....	Windsor, Hants Co.
<b>NEW BRUNSWICK—</b>		
Albert Manufacturing Co.....	Hillsborough.....	Hillsborough, Albert Co.
Hillsborough Plaster, Quarrying and Manufactur- ing Co.....	Hillsborough.....	Edgetts Landing, Albert Co.
<b>ONTARIO—</b>		
The Ontario Gypsum Co., Ltd.....	Paris.....	Caledonia, Seneca Tp. Lythmore, Oneida Tp.
<b>MANITOBA—</b>		
Manitoba Gypsum Co., Ltd.....	Box 3057, Winnipeg.....	Gypsumville.
<b>BRITISH COLUMBIA—</b>		
The Soda Mining & Products Co., Ltd.....	12 Bank of Hamilton Bldg., Van- couver.....	Lillooet District.
Ward Agencies.....	423 Hamilton St., Vancouver.....	"

## The Iron Oxide Mining Industry

Name	Address	Location
<b>QUEBEC—</b>		
Argall, Thos. H.....	Point du Lac.....	Point du Lac, St. Maurice Co.
Canada Paint Co., Ltd.....	572 William St., Montreal.....	Red Mill, Champlain Co.
Champlain Oxide Co.....	Three Rivers.....	Champlain, Champlain Co.
Montmorency Paint Products Co., Ltd.....	6 d'Aiguillon St., Quebec.....	
<b>BRITISH COLUMBIA—</b>		
Davidson, J. G., and Thompson, J. H.....	1641 Woodland Drive, Vancouver.....	Alta Lake, Mons, B.C.
McDonald, R. W.....	823 Fifth Ave. West, Calgary, Alta...	Windermere District, B.C.

## The Magnesite Industry

Name	Address	Location
<b>QUEBEC—</b>		
International Magnesite Co., Ltd.....	Calumet.....	Hartington Township.
North American Magnesite Producers, Ltd.....	127 Board of Trade Bldg., Montreal...	Grenville Township.
Scottish Canadian Magnesite Co.....	Magnesite.....	Grenville Township.

## The Magnesium Sulphate Mining Industry

Name	Address	Location
Basque Chemical Production Co., Ltd.....	Bank of Nova Scotia Bldg., Vancouver, B.C.....	Basque, B.C., (near Ashcroft)

## The Mica Industry

Name	Address	Location
<b>QUEBEC—</b>		
Argall, W. A.....	Laurel.....	Argenteuil Co.
Beaver, W. H.....	Calumet.....	
Blackburn Bros.....	134 Wellington St., Ottawa, Ont.....	Templeton Tp.
Brown, C. C. and J. F.....	Cantley.....	
Cheslock, Isidore.....	High Falls.....	Portland West Tp.
Cross, W. C.....	Cascades.....	Hull Tp.
Dougherty, A.....	Wakefield.....	
De Rainville, J.....	St. Pierre de Wakefield.....	
Flynn, H. T.....	106-8 Montcalm St., Hull.....	Hull Tp.
Gauthier and Guilbault.....	Buckingham.....	Portland Tp.
Laurentide Mica Co., Ltd.....	119 Queen St., W., Ottawa, Ont.....	East Templeton Tp.
McConnell Consolidated Co.....	28 Wellington St., Toronto, Ont.....	Hull Tp.
McGlashan, R. J. and Co.....	Cantley.....	Hull Tp.
Murphy, P.....	Templeton.....	
Wallingford Bros., Ltd.....	Perkins.....	Perkins.
Winning, Bush.....	Notre Dame de la Salette.....	Portland Tp.
<b>ONTARIO—</b>		
Gould Lake Mining Association.....	Sydenham.....	
Green, Geo.....	Perth Road.....	
Hogan, G. P.....	Sydenham.....	
Kent Bros. and Estate J. M. Stoness.....	Kingston.....	Loughborough Tp.
Lee, W. W.....	Bedford Mills.....	
Martin, A. G.....	231 Besserer St., Ottawa.....	Loughborough Tp.
McFadden, R. J.....	Sydenham.....	
McNamara, H. E.....	Sydenham.....	
Nellis, T.....	Sydenham.....	
Orser, S. H.....	Perth.....	
Sullivan and Rodgers.....	Elgin.....	Bastard Tp.
The Loughborough Mining Co., Ltd.....	Sydenham.....	Loughborough Tp.
Tory Hill Marble and Mica Co., Ltd.....	Tory Hill.....	Glamorgan Tp.
Trousdale, P. J.....	Sydenham.....	
Woodruff, H. B.....	Perth Road.....	
Wright, R.....	Carleton Place.....	

## The Natro-Alunite Mining Industry

Name	Address	Location
Alunite Chemical Corp., Ltd.....	Esquimalt, B.C.....	Kyuquot Harbour, Vancouver Island.

## The Natural Gas Industry

Name	Address	Location
NEW BRUNSWICK— New Brunswick Gas & Oilfields, Ltd.	Box 196, Moncton.	Stony Creek, Albert Co.
ONTARIO— Aldrich Gas and Oil Co., Ltd.	Merchants' Bank Bldg., Hamilton.	Rainham Tp.
Allied Gas and Oil Co. (formerly Clover Gas & Oil Co.)	Welland.	Moulton Tp.
Azoff Gas Co.	Canfield.	North Cayuga Tp.
Beaver Oil and Gas Co., Ltd. (a)	Binbrook.	Binbrook Tp.
Beer, Geo.	Ridgetown.	Howard Tp.
Bennett, J.	Ridgeway.	Bertie Tp.
Bertie Natural Gas Co., Ltd.	Binbrook.	Binbrook Tp.
Binbrook Gas Co.	Montreal, Que.	Humberstone Tp.
Canada Cement Co., Ltd.	R. R. 2, Marshville.	Wainfleet Tp.
Canby, B. F.	Selkirk.	Canboro, Cayuga N., Rainham and Seneca Tps.
Canboro Gas & Oil Co.	Canfield.	Cayuga N. Tp.
Canfield Natural Gas Co.	Imperial Bank Chambers, Niagara Falls.	Euphemia Tp.
Castle Oil and Gas Co.	Chippawa.	Willoughby Tp.
Chippawa Development Co., Ltd.	Tavistock.	Caistor and Gainsboro Tps.
Chippawa Oil and Gas Co., Ltd.	Welland Port.	Wainfleet and Gainsboro Tps.
Coleman, J. A.	518 Jackson Bldg., Buffalo, N.Y., U.S.A.	Bayham, Binbrook, Caistor, Canboro, Cayuga N., Cayuga S., Charlotteville, Dunn, Dunwich, Glanford, Houghton, Malahide, Middleton, Moulton, Oneida, Onondaga, Rainham, Seneca, Walpole, Walsingham N., Walsingham S., Windham, Woodhouse Tps.
Dominion Natural Gas Co., Ltd.	Dunnville.	Dunn and Sherbrooke Tps.
Dunn Natural Gas Co., Ltd.	Hagersville.	Walpole Tp.
Duxbury, J. Henry.	R. R. 2, Lowbanks.	Sherbrooke.
Eastside Gas Co.	Port Colborne.	Wainfleet Tp.
Ellsworth, Fletcher.	R. R. 1, Attercliffe Station.	Canboro Tp.
Emerson, Laidlaw and Troughton.	19 Hudson St., Buffalo, N.Y., U.S.A.	Humberstone Tp.
Empire Limestone Co.	Fisherville.	Rainham Tp.
Fisherville Gas Co.	17 Main St., E., Hamilton.	Seneca Tp.
Glenwood Natural Gas Co., Ltd. (a)	Attercliffe Station.	Canboro Tp.
Hamilton Gas and Oil Co.	Cayuga.	South Cayuga Tp.
Hart and Harrington.	Dunnville.	Moulton Tp.
Hendee Gas Co.	Thorold.	Bertie, Crowland, Humberstone Tps.
Hoffman, Albert.	Kingsville.	Tilbury East Tp.
Industrial Natural Gas Co., Ltd.	Port Maitland.	Dunn Tp.
Jasperson, B.	Selkirk.	Rainham.
Jones, J. S.	Hamilton.	Charlotteville, Middleton, Rainham, Seneca, Walpole Tps.
Kindy, D. and Son.	Dunnville.	Moulton Tp.
King Gas Co., Ralph.	48 St. John's Rd., Buffalo, N.Y., U.S.A.	Moulton Tp.
Lalor, E. R.	Hamilton.	Glanford and Seneca Tps.
Maple Leaf Gas Co.	Box 339, Chatham.	Bayham and Houghton Tps.
Marshall, Jas.	Marshville.	Wainfleet Tp.
Medina Natural Gas Co., Ltd.	9 Maple Ave., Hamilton.	N. Cayuga, Oneida Tp.
Michener, E. C.	503 Bank of Hamilton Bldg., Hamilton.	Binbrook, Rainham, Seneca Tps.
Midfield Gas Co., Ltd.	Lowbanks.	Sherbrooke Tp.
National Gas Co., Ltd.	Hepworth.	Amabel Tp.
Niece, Hosea and Son.	Merchants Bank Bldg., Hamilton.	Rainham Tp.
Northern Gas and Gasoline Co.	Oil Springs.	Enniskillen Tp.
North Shore Gas Co., Ltd.	1804-6 Royal Bank Bldg., Toronto.	Dover West Tp.
Oil Springs Oil & Gas Co., Ltd.	Thorold.	Crowland Tp.
Petrol Oil & Gas Co., Ltd.	Port Colborne.	Oneida, Onondaga, and Seneca Tps.
Pilkington Bros., Ltd.	212 Main & Hughson St., Hamilton.	N. Dorchester Tp.
Port Colborne-Welland Natural Gas and Oil Co., Ltd.	103 Queen St., Niagara Falls.	Bertie, Crowland, Humberstone, Wainfleet, Willoughby Tps.
Progressive Oil and Gas Co.	145½ Front St., Sarnia.	Sarnia Tp.
Provincial Natural Gas & Fuel Co. of Ontario, Ltd.	Lowbanks.	Moulton Tp.
Sarnia Gas & Oil Co.	518 Jackson Bldg., Buffalo, N.Y., U.S.A.	Dunwich, Gosfield, Mersea, Romney, Raleigh, Tilbury East Tps.
Smith, R. H.	Caledonia.	Glanford Tp.
Southern Ontario Gas Co., Ltd.	Hagersville.	Walpole Tp.
Sparham, A. F.	Port Colborne.	Humberstone, Moulton, Sherbrooke and Wainfleet Tps.
Springvale Gas & Oil Co.		
Sterling Gas Co., Ltd.		

(a) Taken over by the Southern Ontario Gas Co., Ltd.

## Natural Gas—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Stevensville Gas & Fuel Co., Ltd.	Stevensville	Bertie Tp.
Sundy Gas and Oil Co.	Dunnville	Canboro Tp.
Union Natural Gas Co. of Canada, Ltd.	43½ Market St., Chatham	Dawn, Dover W., Raleigh, Romney, Tilbury E. Tps.
United Gas Companies, Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Canboro, Cayuga N., Moulton, Seneca and Wainfleet Tps.
Vacuum Oil & Gas, Ltd.	509 Lumsden Bldg., Toronto	Dover West and Middleton Tps.
Van Sickle, A. W.	Onondaga	Onondaga Tp.
Wainfleet-Moulton Gas Co.	R. R. 1, Lowbanks	Moulton and Wainfleet Tps.
<b>MANITOBA—</b>		
Haskill, E. C.	Treherne, Box 64	Treherne.
<b>ALBERTA—</b>		
Alberta Clay Products Co., Ltd.	Box 672, Medicine Hat	Medicine Hat.
Canada Cement Co., Ltd.	Canada Cement Co., Bldg., Montreal	Dauntless.
Canadian Pacific Railway Co.	Montreal, Que.	Medicine Hat.
Canadian Western Natural Gas, Light, Heat & Power Co., Ltd.	215-6th Ave. West, Calgary	Near Barnwell; Bow Island; Brooks; Dunmore; and Calgary.
Canadian Western Power & Fuel Co.	Redcliff	Redcliff.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Redcliff.
Hedley Shaw Milling Co., Ltd.	Medicine Hat	Medicine Hat.
Illinois Alberta Oils and Jennings Refining Co. Ltd.	207-8th Ave. W., Calgary	Turner Valley.
Medicine Hat, Corporation of	Medicine Hat	Medicine Hat.
Ogilvie Flour Mills Co., Ltd.	Medicine Hat	Medicine Hat.
Redcliff Brick & Coal Co., Ltd.	Redcliff	Redcliff.
Royalite Oil Co., Ltd.	239-6th Ave., Calgary	Turner Valley.
Southern Alberta Oils, Ltd.	Calgary	Suffield.
Suffield, Village of	Suffield	Suffield.
Town of Bow Island	Bow Island	Bow Island.
Wetaskiwin, Corporation of	Wetaskiwin	Wetaskiwin.
United Electric & Engineering Co., Ltd.	1721-11th St. West, Calgary	Bassano.

## The Petroleum Industry

Name	Address	Location
<b>NEW BRUNSWICK—</b>		
New Brunswick Oil and Gasfields, Ltd.	Box 196, Moncton	Stony Creek, Albert Co.
<b>ONTARIO—</b>		
Ajax Oil and Gas Company	509 Lumsden Bldg., Toronto	Raleigh Tp.
Anderson Bros. & Thompson	Oil Springs	Enniskillen Tp.
Anderson, J. H.	Oil Springs	"
Armstrong, J. G.	Petrolia	"
Atkinson, John	R.R. No. 3, Petrolia	Plympton Tp.
Bailey, John R.	R.R. No. 3, Petrolia	Moore Tp.
Balls, E. H.	R.R. No. 3, Petrolia	Sarnia Tp.
Banting, Albert E.	Wyoming	Plympton Tp.
Barrett, C. H.	Petrolia	Enniskillen Tp.
Bothwell Oil Co., Ltd.	120 Bay St., Toronto	Zone Tp.
Bowles, J. H.	R.R. No. 3, Petrolia	Sarnia Tp.
Braybrook, J. T.	R.R. No. 3, Petrolia	Enniskillen Tp.
Brook, Thos. A.	Petrolia	"
Brydges, Burt	Petrolia	"
Brydges, Ed. O.	R.R. No. 3, Petrolia	"
Canada Crude Oil Producers Ltd.	Confederation Life Bldg., Toronto	"
Canadian Oil Producing and Refining Co., Ltd.	Petrolia	"
Carleton, George	R.R. No. 2, Petrolia	"
Carman and Fairbank	Petrolia	Zone Tp.
Chester, George and Son	R.R. No. 3, Petrolia	Sarnia Tp.
Coulter, Jas.	Petrolia	Moore Tp.
Crocker-Parks Oil Co., Ltd.	Oil Springs	Enniskillen Tp.
Crotty and Elliott	Bothwell	Zone Tp.
Darling, Arthur C.	Petrolia	Enniskillen Tp.
Dempsey, James	Petrolia	"
Dennis, E. L.	R.R. No. 3, Petrolia	Plympton Tp.
Donald, Geo.	Oil Springs	Enniskillen Tp.
Duncan Bros.	Petrolia	Moore Tp.
Edward, A. C., Estate	Petrolia	Enniskillen Tp.
Edward, F. H.	Petrolia	"
Elliott, Clarence H.	R.R. No. 3, Petrolia	Sarnia Tp.
Elliott, Henry C.	R.R. No. 3, Petrolia	Moore Tp.
Erie Investments, Ltd.	320 Bay St., Toronto	Mosca Tp.
Eureka Oil and Gas Co., Ltd.	37 Sun Life Bldg., Toronto	Raleigh Tp.
Fairbank, C. O.	Petrolia	Zone Tp.
Fairbank, J. H., Estate	R.R. No. 4, Petrolia	Enniskillen Tp.
Fowler, John H.	R.R. No. 4, Petrolia	"
George, Wm.	Oil Springs	"
Goudie, John	R.R. No. 3, Petrolia	"

## The Petroleum Industry—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Griffin, Geo.	R.R. No. 1, Sarnia	Sarnia Tp.
Hamlin, Mrs. Samuel	Box 259, Petrolia	Enniskillen Tp.
Heal, John	Corunna	Moore Tp.
Hillis, James T. and Sons	Oil Springs	Enniskillen Tp.
Hoskin, John	Sarnia	Sarnia Tp.
Houston, King, Estate of	382 Richmond St., London	Enniskillen Tp.
Howlett, Fred	Box 3, Petrolia	"
Hussey, W. J.	Petrolia	"
Jewell, Dan	Oil Springs	"
Jones, Nelson	Oil Springs	"
Johnson, Thos.	Petrolia	"
Josh, John	Petrolia	"
Kerr, John, Estate	Petrolia	"
Kerr, Mrs. Ross	Sarnia	"
Kirk, Elmer	R.R. No. 3, Petrolia	Moore Tp.
Kirk, John	R.R. No. 1, Sarnia	Sarnia Tp.
Lern, Chas.	Petrolia	Moore Tp.
Lewis, John J. Estate	Oil Springs	Enniskillen Tp.
Logan, Herbert	R.R. No. 3, Petrolia	Sarnia Tp.
Logan, Leslie	Petrolia	"
Lucas, Ed.	Sarnia	"
McAlpine, T. A.	R.R. No. 3, Petrolia	Enniskillen Tp.
McCrie, William	R.R. No. 2, Sarnia	Sarnia Tp.
McDougall, D.	Petrolia	Enniskillen Tp.
McGillivray, Geo. A.	London	"
McKay, Jno.	Sarnia	Sarnia Tp.
McClellan, Jas.	R.R. No. 3, Petrolia	Moore Tp.
McClellan, Peter	Corunna	Moore Tp.
McPhedran, John	R.R. No. 3, Petrolia	Enniskillen Tp.
McManus, Alex.	R.R. No. 1, Wyoming	Plympton Tp.
Maitland, Jas. B.	R.R. No. 2, Sarnia	Sarnia Tp.
Maw, Frank	R.R. No. 3, Petrolia	Enniskillen Tp.
Miller, Frank J.	R.R. No. 2, Sarnia	Sarnia Tp.
Miller, S. M.	R.R. No. 3, Petrolia	Moore Tp.
Miller, W. W.	R.R. No. 3, Petrolia	"
Montgomery, Thos.	R.R. No. 3, Petrolia	Enniskillen Tp.
Morningstar, R. B. & L. H.	Oil Springs	"
Morris, Geo.	Petrolia	"
Mott and Mitchell	Oil Springs	"
Mutual Oil Producing Co.	Box 539, London	"
Neath, Arthur	Chatham	Raleigh Tp.
Onondaga Oil and Gas Ltd.	Room 8, Temple Bldg, Brantford	Onondaga Tp.
Ontario Lands and Oil Co., Ltd.	Petrolia	Enniskillen Tp.
Ontario Petroleum Co.	Glencoe	Mosa Tp.
Osborne Oil Producers, Ltd.	Box 700, Petrolia	Moore Tp.
Parks, E. M. & W. H.	R.R. 3, Petrolia	Enniskillen Tp.
Paul, John D.	R.R. No. 1, Wyoming	Plympton Tp.
Porter, H. & G. S.	Petrolia	Mosa Tp.
Quillinan, J. F.	Imperial Bank Chambers, Niagara Falls	"
Rainsberry, Ed. L.	Petrolia	Sarnia Tp.
Rainsberry, Nicholas J.	R.R. No. 3, Petrolia	"
Rainsberry, Walter and Sons	Petrolia	Enniskillen Tp.
Rawson, Andrew and Sons	R.R. No. 3, Petrolia	"
Robinson, John	Box 91, Petrolia	"
Rowe, E. P.	292 Rushton Rd., Toronto	Zone Tp.
Rowe, Geo.	Corunna	Sarnia Tp.
Ruckle, Harry	Petrolia	"
Sanson, Mrs. Carrie	Petrolia	Enniskillen Tp.
Schumacher, Bowen W.	Room 1010, No. 112 West Adams St., Chicago, Ill.	"
Smith, Thos.	R.R. No. 2, Sarnia	Sarnia Tp.
Sproule Bros.	Oil Springs	Enniskillen Tp.
Sproule and Johnston	Oil Springs	"
Storing, N.	R.R. No. 3, Petrolia	Moore Tp.
Taylor, P. V. & Co.	1031 Lumber Exchange Bldg., Chicago, Ill.	Zone Tp.
Walker Oil and Gas of Bothwell	129 Chatham St. W., Windsor	Zone Tp.
Wallen, Alex. C.	Oil Springs	Enniskillen Tp.
Wallen, John, Estate	Oil Springs	"
Wallen and Wallen Estate	Oil Springs	"
Walsh, Mrs. Thos.	Petrolia	"
Warwick, Jos.	Oil Springs	"
Watt, P. J.	River & View Aves., London	"
Wilson, James	R.R. No. 1, Sarnia	Sarnia Tp.
Winnett, J. W. G.	4184 Talbot St., London	Bothwell Tp.
Woodward, J.	Oil Springs	Enniskillen Tp.
Woodward, W.	Oil Springs	"
Yerks, Carleton	Petrolia	"
<b>ALBERTA—</b>		
Canada Southern Oil and Refining Company	Black Diamond	Okotoks Oil Field.
Sheep River Oil Company	422 F. Burns Bldg., Calgary	Turner Valley Oil Field.
Southern Alberta Oils, Ltd.	407 Grain Exchange Bldg., Calgary	"

## The Pyrites Industry

Name	Address	Location
<b>ONTARIO—</b>		
Grasselli Chemical Co., Ltd.....	Hamilton, Ont.....	Blythefield Tp.
Nichols Chemical Co., Ltd.....	Montreal, Que.....	"Northpines Mine," Drayton Tp.
		"Sulphide Mine," Hungerford Tp.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining & Smelting Co. of Canada, Ltd.	Trail B.C.....	"Sullivan Mine," Kimberley
Granby Consolidated Mining, Smelting & Power Co., Ltd.....	Anyox, B.C.....	"Hidden Creek," near Anyox

## The Quartz Industry

Name	Address	Location
<b>QUEBEC—</b>		
O'Brien & Fowler.....	c.o. M. J. O'Brien, Ltd., Ottawa, Ont.	Derry Tp.
Parcher, A.....	Glen Almond.....	Derry Tp.
Pedneaud, G.....	Glen Almond.....	Buckingham Tp.
Silico, Limited.....	103 St. Francois-Xavier, Montreal...	Parish of St. Canut.
<b>ONTARIO—</b>		
Dominion Mines and Quarries, Ltd.....	Canada Life Bldg., 46 King St. West, Toronto.....	District of Algoma. (East Neebish Quarry and Killarney Quarry.)
International Nickel Co. of Canada, Ltd.....	Dominion Bank Bldg., Toronto.....	Dill Tp.
Mond Nickel Co., Ltd., The.....	Coniston.....	Neelon Tp.
Orser-Kraft Feldspar, Ltd.....	Perth.....	Bathurst Tp.
Todesco, C. W.....	Jack Fish.....	Near Jack Fish.
Wright & Co.....	960 Queen St., Sault Ste. Marie.....	Deroche Tp.
<b>BRITISH COLUMBIA—</b>		
Granby Consolidated Mining, Smelting & Power Co., Ltd.....	Anyox.....	Anyox.

## The Salt Industry

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Chambers and MacKay.....	New Glasgow.....	Malagash, Cumberland Co.
<b>ONTARIO—</b>		
Brunner-Mond, Canada, Ltd.....	Canadian Bank of Commerce Bldg., Toronto.....	Amherstburg, Essex Co.
Canadian Salt Co., Ltd.....	719 Sandwich St. W., Windsor.....	Windsor, Essex Co.
Dominion Salt Co., Ltd., The.....	412 N. Front St., Sarnia.....	Sarnia, Lambton Co.
Elarton Salt Works Co., Ltd.....	Warwick.....	Warwick, Lambton Co.
Exeter Salt Works Co., Ltd.....	Exeter.....	Exeter, Huron Co.
Goderich Salt Co., Ltd.....	Goderich.....	Goderich, Huron Co.
Kincardine Salt Co., Ltd.....	Kincardine.....	Kincardine.
Western Canada Flour Mills Co., Ltd.....	Goderich.....	Goderich, Huron Co.
Western Salt Co., Ltd.....	43 Victoria St., Toronto.....	Courtright, Lambton Co.
Wingham Salt Co.....	Wingham.....	Wingham, Huron Co.

## The Sodium Carbonate Mining Industry

Name	Address	Location
<b>BRITISH COLUMBIA—</b>		
Lillooet Soda Co., Ltd.....	502 North West Bldg., Vancouver, B.C.....	Lillooet.

## The Sodium Sulphate Mining Industry

Name	Address	Location
<b>SASKATCHEWAN</b>		
Bishopric and Lent Co.....	Winton Place, Cincinnati, Ohio, U.S.A.	Frederick Lake.
Salts & Chemicals, Ltd.....	207 Weber Chambers, Kitchener, Ont.	Maskakee Lake
Sodium Sulphate Co. of Saskatchewan, Ltd.....	1745 Rose St., Regina, Sask.....	Near Hardy.

## The Talc and Soapstone Mining Industry

Name	Address	Location
QUEBEC— Robertsonville Soapstone Quarry Co.....	Robertsonville.....	Thetford Tp.
ONTARIO— Asbestos Pulp Co., Ltd.....	Madoc.....	"Connolly Mine", Huntingdon Tp.
Gillespie Co., Ltd., Geo. H. (Mill).....	Madoc.....	Plant at Madoc.
Henderson Mines, Ltd.....	Madoc.....	"Henderson Mine," Huntingdon Tp.
Wood, H. H.....	97 Avenue Road, Toronto.....	Mine Centre.
BRITISH COLUMBIA— Eagle Talc and Mining Co.....	W. G. Dickinson, 627 Yates St., Victoria.....	Victoria Mining Division.

## The Tripolite Mining Industry

Name	Address	Location
NOVA SCOTIA— Oxford Tripoli Co., Ltd.....	Oxford.....	Silica Lake.

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

## The Cement Industry

Name	Address	Location
QUEBEC— Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal	Montreal East
ONTARIO— Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal	Belleville
Hanover Cement Co., Ltd.....	Que. ....	Port Colborne
St. Mary's Cement Co., Ltd.....	Hanover.....	Hanover
	49 Wellington St. E., Toronto.....	St. Mary's.
MANITOBA— Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal,	
	Que. ....	Tuxedo,
Commercial Cement Co., Ltd.....	913 Union Bank Bldg., Winnipeg, ...	Babcock
ALBERTA— Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal,	
	Que. ....	Exshaw
Marlboro Cement Co.....	P.O. Box 430, Edmonton.....	Marlboro.
BRITISH COLUMBIA— British Columbia Cement Co., Ltd.....	305 Belmont Bldg., Victoria.....	Bamberton

## The Clay Products Industry—Brick and Tile

Name	Address	Location
NOVA SCOTIA— Brooks, Geo.....	New Glasgow.....	Plymouth
Brooks, Stephen, and Sons.....	Box, 559, New Glasgow.....	New Glasgow.
Miller, Jas. B.....	Elmsdale.....	Barney's Brook
Nova Scotia Clay Works, Ltd.....	Elmsdale.....	Elmsdale Pugwash.
Shaw, Ltd., L. E.....	Avonport.....	Avonport
NEW BRUNSWICK— Loggie Co., Ltd., W. S.....	Chatham.....	Nelson
Northampton Brick Co., Ltd.....	Woodstock.....	Northampton
Ryan and Sons, M.....	Box 575, Fredericton.....	Fredericton, Woodstock Rd.
Tondreau, Jos. A.....	Box 22B, Bathurst.....	Bathurst
QUEBEC— Alex. Mills Brick Co., The.....	Orms town.....	Orms town
Ascot Tile and Brick Co., Ltd.....	Ascot Corner.....	Ascot Corner
Bell, W. and D.....	1236 St. Valier St., Quebec.....	Little River Rd., Que.
Citadel Brick, Ltd.....	421 St. Paul St., Quebec.....	Boischatel
Granby Clay Products, Ltd.....	P.O. Box 266, Granby.....	Granby
Hodgins, David G.....	Box 143, Shawville.....	Shawville
La Cie de Briques de l'Islet.....	L'Islet.....	L'Islet Station
La Cie de Briques de Matane.....	Matane.....	Matane
La Cie de Tuyaux de Drainage, Ltée.....	4 Notre Dame St., Quebec.....	L'Islet Station
Laliberte, Edgar.....	Deschailions.....	Deschailions
Laliberte, Lucius.....	Deschailions.....	Deschailions

## The Clay Products Industry—Brick and Tile—Continued

Name	Address	Location
<b>QUEBEC—Concluded</b>		
Longpre, Emile.....	St. Felix de Valois.....	St. Felix de Valois.
Metis Shale Brick Co., Ltd., The.....	St. Octave de Metis.....	Grand Remon.
National Brick Co. of Laprairie, Ltd.....	Canada Cement Bldg, Montreal.....	Delson and Laprairie.
Proulx, Alfred J.....	P.O. Box 384, Richmond.....	Richmond.
St. Lawrence Brick Co., Ltd., The.....	71 St. James St., Montreal.....	Laprairie.
<b>ONTARIO—</b>		
Alvinston Brick & Tile Co., Ltd.....	Box 26, Alvinston.....	Alvinston.
Armstrong Bros.....	Fletcher.....	Fletcher.
Atlas Brick Co., Ltd.....	30 Toronto St., Toronto.....	Milton Heights
Baird, H. C. and Son.....	Park Hill.....	Park Hill
Baker, Geo. E.....	Arnprior.....	Arnprior.
Bartonville Pressed Brick Co., Ltd.....	Room 35, Sun Life Bldg., Hamilton.....	Bartonville.
Batchelor, Samuel.....	Box 1, Proton.....	Proton.
Bay of Quinte Brick Works.....	Belleville.....	Belleville.
Bechtel Reed Co.....	148 Essex St., Waterloo.....	Waterloo.
Belle River Brick and Tile Co.....	Box 80, Belle River.....	Belle River.
Booth Brick & Lumber Co., The.....	New Toronto.....	Etobicoke
Brampton Pressed Brick Co.....	Brampton.....	Brampton
Broadwell, B., and Son.....	Kingsville.....	(Near) Kingsville
Brownscombe, H. & Sons.....	Box 47, Cargill.....	Cargill.
Caledon Mountain Shale Products.....	88 St. David St., Toronto.....	Credit Forks.
Campbell, Neil F.....	R.R. No. 1, West Lorne.....	West Lorne.
Canadian Fireclay Products, Ltd.....	364 Bay St., Toronto.....	Etobicoke.
Canadian Pressed Brick Co., Ltd.....	Rm. 36, Sun Life Bldg., Hamilton.....	Bartonville.
Chapman, John.....	Napanee.....	Napanee.
Cheeseman, Peter.....	670 King St. W., Hamilton.....	Hamilton.
Cooksville Shale Brick Co., Ltd.....	26 Queen St. E., Toronto.....	Cooksville.
Cooper, W. H.....	312 Clyde Bldg., Hamilton.....	Hamilton
Cornhill, James & Sons, Ltd.....	Grand Ave. E., Chatham.....	Chatham.
Crang, Jethro.....	2 Regal Road, Toronto.....	Toronto.
Crawford Bros.....	451 King St. W., Hamilton.....	Hamilton.
Curtin, Frank.....	R.R. No. 4, Lindsay.....	Lindsay.
Curtis Bros.....	Peterboro.....	Peterboro.
DeLaplante, J. E.....	Dawes Rd., Coleman P.O., Toronto.....	Dawes Road.
Deller, Albert.....	Brownsville.....	Brownsville.
Deller Bros.....	R.R. No. 2, Norwich.....	(Near) Norwich.
Dolan, John.....	R.R. No. 2, Watford.....	Watford.
Dominion Sewer Pipe and Clay Industries, Ltd.....	Swansea.....	Aldershot.
Donaldson, S. E.....	R.R. 4, Harriston.....	Fulton Mills.
Don Valley Brick Works.....	714 Dominion Bank Bldg., Toronto.....	Todmorden.
Dublin Brick & Tile Yard.....	Dublin.....	Dublin S.
Elliott, Charles.....	Bluevale.....	Bluevale.
Elliott, Wm. and Son.....	Glenannan P.O.....	Glenannan.
Elliott, James, Jr.....	519 Wellington St., Sault Ste. Marie.....	E. Korah Tp.
Fort William Brick & Tile Co.....	509 Victoria Ave., Fort William.....	W. Fort William.
Fox, Geo. J.....	Box 243, Dresden.....	Dresden.
Fraser & Leith.....	Blyth.....	Blyth.
Frid Bros.....	Macklin St. & Dundas Road, Hamilton.....	Hamilton.
Frontenac Floor and Wall Tile Co., Ltd.....	Box 214, Kingston.....	Kingston.
Gamage, C. R.....	R.R. No. 2, Dresden.....	Dresden.
Gardiner, Wm.....	Blenheim.....	Blenheim.
Godfrey, Thomas & Co.....	Carleton Place.....	Carleton Place.
Grimsby Brick and Tile Co.....	Grimsby.....	Grimsby.
Haines, W. H. J.....	58 Wellington St., Toronto.....	Tamworth.
Hallatt, Herbert & Son.....	Box 93, Comber.....	Comber.
Halton Brick Co., Ltd.....	28 Symes Rd., West Toronto.....	Near Terra Cotta.
Hamilton Pressed Brick Co.....	Kensington Ave. S., Hamilton.....	Hamilton.
Hill, A. W.....	Essex.....	Stevenson.
Hill, James S. & Son.....	Box 124, Madoc.....	Madoc.
Hill, Aaron.....	Essex.....	Essex.
Hinde Bros.....	134 Northlands Ave., West Toronto.....	West Toronto.
Hirocock Bros. & Co.....	Bowmanville.....	Bowmanville.
Hitch, D. A.....	Erie St. N., Ridgetown.....	Ridgetown.
Hitch, Thos.....	1st Ave., Box 254, St. Thomas.....	St. Thomas.
Hodder, J. H.....	Dutton.....	Dutton
Holland, Wm. and Son.....	Box 20, Ruscomb.....	Ruscomb.
Howlett, Fred.....	Box 3, Petrolia.....	Petrolia.
Interprovincial Brick Co. of Canada, Ltd.....	30 Toronto St., Toronto.....	Cheltenham.
Jackson Bros.....	290 Rawdon St., Brantford.....	Brantford.
Janes, D. A.....	R.R. No. 1, Mt. Brydges.....	Mt. Brydges.
Jamieson Lime Co.....	Renfrew.....	Renfrew.
Jaspersen B. Brick & Tile Yards.....	Kingsville.....	Coatsworth.
Jervis, John and Son.....	Dorchester Station.....	Dorchester Station.
Johnson, James, Sr.....	R. R. No. 3, Pembroke.....	Pembroke.
Kerr, Frederick.....	Crediton.....	Crediton E.
Kerr and Pettman.....	Goderich.....	Ben Miller.
Koebel, Joseph Z.....	Box 54, St. Clements.....	St. Clements.
Kruse Bros.....	Seaforth.....	Tuckersmith.
Kuhn, Henry J.....	Centralia.....	Crediton E.
Labey and Son.....	Foxboro.....	Foxboro
Lindsay, Earl.....	R.R. No. 2, Wallaceburg.....	Tupperville.
Lowes Bros.....	R.R. No. 3, Chatham.....	Chatham East.
McComb, Chester.....	Denfield.....	Elginfield.
McCormick Bros.....	R.R. No. 5, Watford.....	Kingsford Junction.
McIvor Bros.....	Division St., Cobourg.....	Cobourg.

## The Clay Products Industry—Brick and Tile—Continued

Name	Address	Location
<b>ONTARIO—Concluded</b>		
McMahon, Robert.....	R.R. No. 2, Kerwood.....	Strathroy.
Martin, Thos. E.....	Thamesville.....	Thamesville.
Maw Bros.....	Minesing.....	Minesing.
Merkleys, Ltd.....	9 Fraser Bldg., Ottawa.....	Billings Bridge.
Middleton, C.....	Wyoming.....	Wyoming.
Midland and Penetanguishine Brick Works.....	Box 143, Penetanguishine.....	Penetanguishine.
Milton Pressed Brick Co., The.....	Milton.....	Milton and Streetsville.
Miner, M. F.....	Kingsville.....	Kingsville.
Missouri Tile Yard (W. H. Deller).....	Thorndale, R.R. No. 4.....	Thorndale.
Moscow Brick and Tile Works.....	R.R. No. 1, Greenock.....	Riverdale.
National Fire Proofing Co.....	601 Dominion Bank Bldg., Toronto.....	Waterdown.
New, Edward.....	133 George St., Hamilton.....	Hamilton.
O'Dell, Wm. and Son.....	R.R. No. 1, Ingersoll.....	Ingersoll.
Ollman Bros.....	Macklin St., Box 241, Hamilton.....	Hamilton.
Ontario Paving Brick Co., Ltd.....	353 Weston Rd., South, West 1 or onto.....	S. Toronto.
O'Reilly, T. E.....	320 Bay St., Ottawa.....	Hogs Back.
Ottawa Brick Mfg. Co., Ltd., The.....	53 Queen St., Ottawa.....	Hogs Back.
Ott Brick & Tile Mfg. Co., Ltd., The.....	33 King St. E., Kitchener.....	Kitchener.
Owen Sound Brick Co., Ltd., The.....	859-2nd Ave. E., Owen Sound.....	Owen Sound.
Paxton & Bray.....	230 Queenston St., St. Catharines.....	St. Catharines.
Pembroke Brick Co., The.....	Pembroke.....	Pembroke.
Phillips, Thomas & Son.....	R.R. No. 2, Lucknow.....	St. Helens.
Phippen & Field.....	150 Dawes Rd., Toronto.....	Toronto.
Piggott, G. E., & Co.....	20 Guestville Ave., Mt. Dennis.....	Mount Dennis.
Port Credit Brick Co., Ltd., The.....	Port Credit.....	Port Credit.
Port Rowan Brick & Tile Co.....	Port Rowan.....	Port Rowan.
Price and Cumming.....	Salisbury Ave., Humber Bay.....	Humber Bay.
Price, John, Ltd.....	395 Greenwood Ave., Toronto.....	Toronto.
Price and Smith.....	458 Greenwood Ave., Toronto.....	Toronto.
Provincial Brick Plant.....	Parliament Bldg., Toronto.....	Mimico.
Red Star Brick & Tile Yard (W.H. Barnhardt).....	Stratford.....	Stratford.
Reid, Jas.....	R.R. No. 3, Belmont.....	South Dorchester.
Richardson, Jas. & Son.....	Kerrwood.....	Kerrwood.
Risley Brick Co., Ltd.....	Main St. W., Hamilton.....	Hamilton.
Russell, Jos.....	40 Blake St., Toronto E.....	Toronto E.
Russell Shale Brick Ltd.....	100 Standard Bank Bldg., Ottawa.....	Russell.
Shale Products Ltd.....	Inglewood.....	Inglewood.
Smith, Alex. & Son.....	R. R. No. 2, Dutton.....	Dutton.
Snelgrove, A.....	Beaverton.....	Beaverton.
Sproat, Wm. M.....	R.R. No. 4, Seaforth.....	Seaforth.
Standard Brick Co., Ltd., The.....	363 Broadview Ave., Toronto.....	Toronto.
Steele, Edwin.....	Vankleek Hill.....	Vankleek Hill.
Stevens Bros. (Huntsville Brick Co.).....	Box 308, Huntsville.....	Huntsville.
Staples Brick & Tile Co.....	Staples.....	Staples.
Stratford Brick Tile and Lumber Co.....	Mansion House, Stratford.....	Stratford.
Streetsville Brick Co., Ltd., The.....	410 Crown Office Bldg., Toronto.....	Streetsville.
Stroh, M. C.....	Conestogo.....	Conestogo.
Sun Brick Co., Ltd.....	32 Toronto St., Toronto.....	Toronto.
Superior Brick and Tile Co., Ltd.....	426 Victoria Ave., Port William.....	Slate River.
Tilbury Brick & Tile Co.....	Tilbury.....	Tilbury.
Tope, Richard, Estate.....	171 Queen St., S., Hamilton.....	Hamilton.
Toronto Brick Co., Ltd.....	60 Victoria St., Toronto.....	Milton.
Tweed Brick & Tile Works.....	Tweed.....	Tweed.
Wagstaff, Charles.....	R.R. No. 4, Lindsay.....	Lindsay.
Wagstaff, A. H. & Co.....	348 Greenwood Ave., Toronto.....	Toronto.
Wallace R. & Son.....	Box 305, North Bay.....	North Bay.
Weiss, Aaron.....	Crediton.....	Crediton.
Whitby Brick & Clay Products Co., Ltd.....	Whitby.....	Whitby.
Wilson, S. & Sons.....	R.R. No. 2, Paisley.....	Lovet.
Windsor Brick & Tile Co.....	201 Exchange Bldg., Windsor.....	Near Kingsville.
Woodslee Brick & Tile Yards.....	South Woodslee.....	Woodslee.
Wright, Geo. & Sons.....	Comber.....	Comber.
<b>MANITOBA—</b>		
Alsip Brick, Tile & Lumber Co., Ltd.....	200 Tribune Bldg., Winnipeg.....	Winnipeg.
McArthur, J. D. Company, Ltd.....	1003 McArthur Bldg., Winnipeg.....	Lac du Bonnet.
Marion, Joseph A.....	Box 30, St. Boniface.....	Plunguet St., St. Boniface.
Sidney Brick & Clay Works, Ltd.....	Sidney.....	Sidney.
Snyder, A. & Company, Ltd.....	Box 1401, Portage la Prairie.....	Portage la Prairie.
Wardrop & Sons.....	Whitemouth.....	Whitemouth.
<b>SASKATCHEWAN—</b>		
Bruno Clay Works, Ltd.....	Bruno.....	Near Bruno.
Christian Community of Universal Brotherhood, Ltd., The.....	Box 122, Verigin.....	Yorkton.
Dominion Fire Brick and Clay Products, Ltd., The.....	Box 99, Moosejaw.....	Claybank.
Elliott, W. H. & Son.....	1320-3rd Ave. N., Saskatoon.....	N. Saskatoon.
Estevan Coal and Brick Co., Ltd., The.....	Estevan.....	Estevan.
Excelsior Brick Co., Ltd., The.....	Prince Albert.....	Prince Albert.
Meota Brick Co.....	Meota.....	Meota.
Saskatchewan Penitentiary.....	Prince Albert.....	Prince Albert.
<b>ALBERTA—</b>		
Acme Brick Co., Ltd., The.....	125 Alberta Block, Edmonton.....	Cannell.
Alberta Brick Co., Ltd.....	10936-123rd St., Edmonton.....	Cannell.
Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Phillips Sq., Montreal, Que.....	Sandstone.

## The Clay Products Industry—Brick and Tile—Concluded

Name	Address	Location
<b>ALBERTA—Concluded</b>		
Crandell, E. H. Pressed Brick & Sandstone Co.....	607 McLean Block, Calgary.....	Brickburn.
Gas City Brick Co., Ltd.....	Box 656, Medicine Hat.....	Medicine Hat.
Little, J. B. & Sons.....	Water St., Riverdale, Edmonton....	Water St., Riverdale.
Redcliff Brick and Coal Co., Ltd.....	Box B 5, Redcliff.....	Redcliff.
Redcliff Pressed Brick Co., Ltd.....	Box 87, Redcliff.....	Redcliff.
Redcliff Premier Brick Co., Ltd.....	Box C 2, Redcliff.....	Redcliff.
Zuehkan, Mike and Co.....	Box 11, Smoky Lake.....	Smoky Lake.
<b>BRITISH COLUMBIA—</b>		
Armstrong Brick Works.....	Armstrong.....	Armstrong.
Bazan Bay Brick & Tile Co.....	Bazan Bay, Vancouver Island.....	Bazan Bay.
Clayburn Co., Ltd.....	304 Credit Foncier Bldg., Vancouver	Clayburn.
Enderby Brick and Tile Co., Ltd.....	Enderby.....	Enderby.
Furnell and DeLong.....	Gabriola Is.....	Gabriola Is.
Humber Brick Co.....	740 Topaz Ave., Victoria.....	Victoria.
Johnston & Co., Ltd.....	Box 250, Kamloops.....	Near Kamloops.
Port Hancy Brick Co., Ltd., The.....	846 Howe St., Vancouver.....	Port Hancy.
Victoria Brick Co., Ltd.....	3001 Douglas St., Victoria.....	Victoria.

## The Clay Products Industry—Clay Sewer Pipe

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Standard Clay Products, Ltd.....	New Glasgow.....	New Glasgow.
<b>QUEBEC—</b>		
Standard Clay Products, Ltd.....	St. John's.....	St. John's.
<b>ONTARIO—</b>		
Dominion Sewer Pipe and Clay Industries, Ltd.....	Swansea.....	Swansea.
Hamilton and Toronto Sewer Pipe Co., Ltd., The....	Wentworth St. N., Hamilton.....	Hamilton.
Ontario Sewer Pipe and Clay Products, Ltd.....	Mimico.....	Mimico.

## The Clay Products Industry—Firebrick and Fireclay Products

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.....	Sydney.....	Sydney
Intercolonial Coal Mining Co., Ltd.....	Westville.....	Westville.
<b>QUEBEC—</b>		
*Canadian Firebrick Co., Ltd.....	371 Aqueduct St., Montreal.....	Montreal.
Montreal Terra Cotta Co., Ltd.....	511 St. Catharines St. West, Montreal	Lakeside.
Standard Clay Products, Ltd.....	P.O. Box 819, St. John's.....	St. John's.
<b>ONTARIO—</b>		
Algoma Steel Corporation Ltd.....	Sault Ste. Marie.....	Sault Ste. Marie.
*Bailey, Geo., & Co.....	321 Albany St., Toronto.....	Toronto.
*Dominion Glass Co., Ltd.....	285 Beaver Hall Hill, Montreal, Que	Wallaceburg.
National Fire Proofing Co. of Canada, Ltd.....	601 Dominion Bank Bldg., Toronto..	Aldershot.
<b>ALBERTA—</b>		
Alberta Clay Products, Ltd.....	Box 672, Medicine Hat.....	Medicine Hat.
<b>BRITISH COLUMBIA—</b>		
Clayburn Co., Ltd.....	Credit Foncier Bldg., Vancouver....	Clayburn.

## The Clay Products Industry—Kaolin and Other Clays

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Bras d'Or Coal Co., Ltd.....	Little Bras d'Or.....	North Sydney.
Intercolonial Coal Mining Co., Ltd.....	Westville.....	Westville.
Nova Scotia Steel and Coal Co., Ltd.....	New Glasgow.....	Shubenacadie.
<b>QUEBEC—</b>		
Canadian China Clay Co., Ltd.....	Room 37-43 Victoria St., Toronto...	St. Remi d'Amherst
<b>ONTARIO—</b>		
Inferno Clay Products.....	Box 123, Stoney Creek.....	Stoney Creek.

## The Clay Products Industry—Stoneware and Pottery

Name	Address	Location
NEW BRUNSWICK— Foley Pottery, Ltd.....	St. John.....	St. John.
QUEBEC— *Canadian Potteries, Ltd.....	2 Longueuil St., St. John's.....	St. John's.
*Canada Stoneware Works.....	Iberville.....	Iberville.
*Dominion Sanitary Pottery Co., Ltd.....	189 St. James St., St. John's.....	St. John's.
ONTARIO— *Campbells Sons, R.....	100 Locke St., S., Hamilton.....	Hamilton.
*Canadian General Electric Co.....	212 King St. West, Toronto.....	Peterborough.
*Canadian Porcelain Co., Ltd.....	Paradise Rd., Hamilton.....	Hamilton.
Davis, John and Sons.....	60 Heath St. W., Toronto.....	Toronto.
Dominion Insulator and Manufacturing Co., Ltd.....	Niagara Falls.....	Niagara Falls.
Foster Pottery Co.....	Main St. W., Hamilton.....	Hamilton.
ALBERTA— Medalta Stoneware, Ltd.....	Medicine Hat.....	Medicine Hat.

\*Imported clays only.

## The Lime Industry

Name	Address	Location
NOVA SCOTIA— Dominion Iron and Steel Co., Ltd.....	Sydney.....	Sydney.
NEW BRUNSWICK— Peters, C. H. & Sons, Ltd.....	Ward St., St. John.....	Torreyborn.
Provincial Lime Co., Ltd.....	89 Water St., St. John.....	Brookville.
Purdy and Green.....	323 Main St., St. John.....	St. John.
Randolph and Baker, Ltd.....	Randolph.....	Randolph.
Setson, Cutler & Co., Ltd.....	Campbellton.....	Indiantown, St. John.
QUEBEC— Armand and Beaudry.....	Joliette.....	Joliette.
Baron, Adolphe.....	St. Dominique de Bagot.....	St. Dominique de Bagot.
Boivin, Arthur.....	Pont Rouge.....	Pont Rouge.
Carswell, Robt. B.....	Bryson.....	Bryson.
Dominion Lime Co., The.....	Box 149, Sherbrooke.....	Lime Ridge.
Laurentian Stone Co., Ltd.....	250 Catherine St., Ottawa, Ont.....	Hull.
Limoges, Olivier, Estate of.....	40 rue Pouport, Montreal.....	Montreal.
McCambley, Thos.....	Kazubazua.....	Kazubazua.
Montreal Lime Co.....	31 Prenouveau St., Montreal.....	Montreal.
St. Maurice Lime Co., Ltd.....	Three Rivers.....	St. Louis de France.
St. Vincent de Paul Penitentiary.....	Dept. of Justice, Ottawa, Ont.....	St. Vincent de Paul Penitentiary.
Sovereign Lime Works, Ltd.....	Delorimier Ave., and C.P.R. Tracks, Montreal.....	Montreal.
Standard Lime Co., Ltd.....	Joliette.....	St. Marc des Carrieres. St. Paul de Joliette.
ONTARIO— Alabastine Co., Ltd., The.....	Paris.....	Elora.
American Cyanamid Co.....	511-5th Ave., New York City.....	Teeswater.
Beachville White Lime Co., Ltd.....	Beachville.....	Niagara Falls.
Brunner-Mond (Canada), Ltd.....	Canadian Bank of Commerce Bldg., Toronto.....	Beachville.
Biederman, Albert G.....	R.R. No. 1, Golden Lake.....	Anderson Township.
Cameron, W. M.....	Carleton Place.....	Golden Lake.
Canada Lime Co., Ltd.....	177 Kent St., Lindsay.....	Carleton Place.
Chalmers Lime Works.....	889 Seventh St. West, Owen Sound.....	Coboconk, Victoria Co.
Christie Henderson & Co., Ltd.....	201 Crown Office Bldg., Toronto.....	Owen Sound.
Dominion Sugar Co., Ltd.....	Chatham.....	Hespeler.
Gallagher Lime and Stone Co., Ltd.....	James Street, Hamilton.....	Kelso and Puslinch.
Harvey, Ltd., E.....	12 Douglas St., Guelph.....	Chatham.
Jamieson, J. M.....	Forrester's Falls.....	Wallaceburg.
Jamieson Lime Co.....	Hall St., Renfrew.....	Hamilton.
Marshall, James.....	Hamilton.....	Rockwood.
Parks Bros.....	Troy.....	Forrester's Falls.
Robertson Co., Ltd., D.....	26 Queen St. East, Toronto.....	Renfrew.
Smith, John.....	Tiverton.....	Hamilton.
Standard White Lime Co., Ltd.....	15 Douglas St., Guelph.....	Troy.
Standard Chemical Co., Ltd.....	906 Drummond Bldg., Montreal, Que.....	Milton.
Toronto Brick Co., Ltd.....	60 Victoria St., Toronto.....	Inverhuron.
Toronto Lime Co., Ltd.....	26 Queen St., Toronto.....	Beachville.
Vogan, Samuel.....	Gould St., Wiarton.....	Guelph and St. Mary's.
Weppler, Henry.....	R.R. No 2, Priceville.....	Eganville.
MANITOBA— Bowman, D., Coal and Supply Co., Ltd.....	461 Main St., Winnipeg.....	Coboconk.
Moosehorn Lime Co., Ltd., The.....	214 Avenue Bldg., Winnipeg.....	Dolly Varden Siding.
Winnipeg Supply and Fuel Co., Ltd.....	214 Avenue Bldg., Winnipeg.....	Warton.
ALBERTA— Loder Lime Co., Ltd.....	Kananaskis.....	Glenelg Tp.
Summit Lime Works.....	803-6th Avenue S., Lethbridge.....	Oak Point.
BRITISH COLUMBIA— Hedley Gold Mining Co., Ltd.....	Hedley.....	Moosehorn.
Pacific Lime Co., Ltd.....	602 Pacific Bldg., Vancouver.....	Stonewall.
Rosebank Lime Co.....	602 Pacific Bldg., Vancouver.....	Kananaskis.
		1½ miles east of Crow's Nest.
		Hedley.
		Blubber Bay, Texada Island
		Esquimalt Harbour.

## The Stone Quarrying Industry—Marble

Name	Address	Location
QUEBEC— Wallace Sandstone Quarry, Ltd.....	120 St. James St., Montreal.....	Philipsburg, Missisquoi County.

## The Stone Quarrying Industry—Sandstone

Name	Address	Location
NOVA SCOTIA— Wallace Sandstone Quarries, Ltd.....	120 St. James St., Montreal.....	Wallace.
NEW BRUNSWICK— Miramichi Quarry Co., Ltd.....	Quarryville.....	Quarryville.
Read Stone Co., Ltd.....	Sackville.....	Sackville.
QUEBEC— Kirby Co., Ltd., T. Sidney.....	213 Sussex St., Ottawa.....	Two Mountains.
Richelieu Quarry Co.....	St. Jean.....	St. Luc.
ONTARIO— Rogers, F. & Co.....	1193 Queen St. W., Toronto.....	Glen Williams and Terra Cotta.

## The Stone Quarrying Industry—Slate

Name	Address	Location
QUEBEC— British Canadian Marble Co., Ltd.....	St. Joseph de Beauce, Que.....	St. Joseph de Beauce.
Slate Products Co. of Canada, Ltd.....	Southam Bldg., Montreal.....	Melbourne Tp.

## The Stone Quarrying Industry—Granite

Name	Address	Location
NOVA SCOTIA— Fairview Crushed Stone Co., Ltd.....	Roy Bldg., Halifax.....	Fairview.
Hoyt, C. M.....	Middleton.....	Nictaux W.
Nova Scotia Supply Co., Ltd.....	603 Barrington St., Halifax.....	Halifax.
Rice, Elmer.....	Laurencton.....	Nictaux W.
Rice, W. D.....	Bear River.....	"
NEW BRUNSWICK— Granite Street Pavement and Construction Co., Ltd.....	Evandale.....	Hampstead.
McGrattan, Henry and Sons.....	St. George.....	St. George.
Meating, Epps, Company, Ltd.....	St. George.....	"
Milne and Coutts & Co., Ltd.....	St. George.....	"
Mooney, B. and Sons, Ltd.....	112 Queens St., St. John.....	Queens County.
O'Brien and Baldwin.....	St. George.....	St. George.
Public Works, Department of.....	St. John.....	St. John.
QUEBEC— B. and R. Granite Quarry.....	Beebe.....	Stanstead Tp.
Brodie's Limited.....	128 Bleury St., Montreal.....	Guenette, Mt. Johnson, Graniteville.
Brunet, Joseph.....	663 Cote des Neiges Rd., Montreal.....	Chatham Tp.
Dumas, Arthur.....	Riviere à Pierre.....	Riviere à Pierre.
Duncan, Wm.....	Graniteville.....	Beebe.
La Carrière Buisière, Limitée.....	St. Sebastien.....	St. Sebastien.
Laessle, J. C.....	Beebe.....	Beebe.
Lavoie et Robitaille.....	Roberval.....	Roberval.
Norton, S. B.....	Beebe.....	Beebe.
Scotstown Granite Corporation.....	Scotstown.....	Scotstown.
Stanstead Granite Quarries Co., Ltd.....	Beebe.....	Graniteville.
Voyer, F., and Frère.....	Riviere à Pierre.....	Riviere à Pierre.
ONTARIO— Abrams, J. M.....	Gananoque.....	Gananoque.
Bruce Mines Trap Rock Co., Ltd.....	Sault Ste. Marie, Mich.....	Bruce Mines.
Brown, A. C.....	Lyndhurst.....	Leeds Tp.
Campbell and Lattimore.....	Canadian Pacific Railway Bldg., Toronto.....	Findley.
Corporation of City of Fort William.....	City Hall, Fort William.....	Fort William.
Gordon, D. J., Granite Co.....	18 Toronto St., Toronto.....	Gananoque.
Horne, Wm.....	31 Rothesay Apt., Winnipeg, Man.....	Butler.
Mond Nickel Co., Ltd.....	Coniston.....	Drury and Lavack Tps.
Morrison Bros.....	Coo Hill.....	Wollaston.
Ontario Rock Co., Ltd.....	410 Crown Office Bldg., Toronto.....	Belmont Tp.
Reece-Hall, R.....	Parry Sound.....	McDougall Tp.
Streets and O'Brien.....	47 Yonge St., Toronto.....	Gananoque.
BRITISH COLUMBIA— B.C. Monumental Works, Ltd.....	2250 Main St., Vancouver.....	Granite Island.
Canadian Pacific Railway Company.....	Montreal, Que.....	Mountain Sub-division.
Coast Quarries, Limited.....	837 Hasting St., Vancouver.....	Granite Falls.
Gilley Brothers, Ltd.....	902 Columbia St. W., New Westminster.....	Coquitlam Municipality.
Nelson, City of.....	Box 1028, Nelson.....	Nelson.
Vancouver Granite Co., Ltd.....	875 Bower Bldg., Vancouver.....	Nelson Island and Gabriola.
Vernon Granite and Marble Company.....	Box 285, Vernon.....	Yale Dist.

## The Stone Quarrying Industry—Limestone

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Eastern Lime Co.....	Windsor.....	Windsor.
Nairn, John S.....	24 Whitney Ave., Sydney.....	Scotch Lake.
Dominion Iron and Steel Co., Ltd.....	Sydney.....	Ft. Edward, C. B. and Orangedale.
<b>NEW BRUNSWICK..</b>		
Peters, C. H., Sons, Ltd.....	St. John.....	Torreyburn.
Provincial Lime Co., Ltd.....	89 Water St., St. John.....	Brookville.
Stetson, Cutler and Co., Ltd.....	Campbellton.....	St. John.
<b>QUEBEC—</b>		
Canada Carbide Co., Ltd.....	Power Bldg., Craig St.W., Montreal.....	Bedford.
Canada Cement Company.....	Phillips Square, Montreal.....	Hull.
Cousineau, Alderic.....	2455 St. Urban St., Montreal.....	Montreal.
Deguire Quarry Company.....	Suite 2, 207 St. James St., Montreal.....	St. Laurent.
DeLorimier Quarry Company.....	1952 Iberville St., Montreal.....	Montreal.
Deschambault Quarry Corporation.....	52 rue St. Paul, Quebec.....	St. Marc (Portneuf).
Deschambault Stone Co., Ltd.....	St. Marc des Carrieres.....	St. Marc des Carrieres.
Dussault, Art.....	St. Marc des Carrieres.....	
Gagnon, Martin.....	3595 rue St. Herbert, Montreal.....	Montreal.
Gravel, Ed. L.....	Chateau Richer.....	Chateau Richer.
Institution des Sourds-Muets.....	3600 rue St. Laurent, Montreal.....	St. Laurent.
Kennedy Const. Co., Ltd.....	137 McGill St., Montreal.....	Terrebonne.
Lapointe, Jos.....	74 Monté St. Laurent, Cartierville.....	Cartierville.
Lapointe, Hector.....	St. Dominique.....	St. Dominique.
Laurentian Stone Co., Ltd.....	250 Catherine St., Ottawa.....	Hull.
Laval Quarry Co., Ltd.....	Cap St. Martin.....	Cap St. Martin.
Mahoney and Rich.....	88 Bank St., Ottawa.....	Merivale Rd.
Maisonneuve Quarry Co., Ltd.....	2855 Rosemont Blvd., Montreal.....	Montreal.
Martineau, O., & Son, Ltd.....	371 Marie Anne Est., Montreal.....	St. Marc (Portneuf).
Montreal Crushed Stone Co., Ltd.....	590 Union Ave., Montreal.....	St. Vincent de Paul.
Montreal Quarry Ltd.....	800 Belle Chasse St., Montreal.....	Central Park, Montreal.
Naud, Jos. D.....	St. Marc des Carrieres.....	St. Marc des Carrieres.
O'Connor Bros.....	Huntingdon.....	Huntingdon.
Quebec Quarry, Ltd.....	319 St. Paul St., Quebec.....	Beauport.
Quinlan Cut Stone, Ltd.....	4414 St. Catherine St., Westmount.....	Montreal.
Roberge Quarry, Ltd.....	126 St. Pierre St., Quebec.....	Chateau Richer.
Rogers Quarry Co.....	1701 Iberville St., Montreal.....	Montreal.
St. Laurent Quarry, Limited.....	Cap St. Martin.....	Cap St. Martin.
St. Vincent de Paul Penitentiary.....	St. Vincent de Paul.....	St. Vincent de Paul.
Simard, Alfred.....	Chambly Basin.....	St. Joseph Chambly.
Tremblay, Nap.....	Joffre Ave., Hull.....	Hull.
Verreault, Elzear.....	191 rue du Pont, Quebec.....	Giffard.
Villeray, Quarry Co., Ltd., The.....	845 du Rosaire St., Montreal.....	Montreal.
<b>ONTARIO—</b>		
Alabastine Co. Paris, Ltd.....	Paris.....	Elora.
Belton, Peter.....	St. Catharines.....	Grantham.
Bergin, Pat.....	Napanee.....	Napanee.
Bourgie, J. B.....	Embrun.....	Embrun.
Brunner Mond Canada Ltd.....	Canadian Bank of Commerce Bldg., Toronto.....	Anderdon Tp.
Brussels Village Quarry.....	Brussels.....	Brussels.
Canada Crushed Stone Corporation, Ltd.....	Dundas.....	West Flamboro Tp.
Carleton, County of.....	No. 71½ Sparks St., Ottawa.....	Osgoode-Gloucester-Nepean.
Cloutier & Trenon.....	Casselman.....	St. Isidore de Prescott.
Cook & Son, J. S.....	Warton.....	Amabel Tp.
Crushed Stone, Ltd.....	Kirkfield.....	Kirkfield.
Farmer, Geo. & Sons.....	45 Bertrand Ave., Ottawa.....	Osgoode Tp.
Farr, L. G.....	Haileybury.....	Haileybury.
Foster, R. R.....	278 Echo Drive, Ottawa.....	City View.
Gallagher Lime & Stone Co.....	James St., Hamilton.....	Barton Tp.
Galt, Corporation of.....	Galt.....	Galt.
Gow, James.....	Fergus.....	Fergus.
Grant Bros Construction Co., Ltd.....	18 Rideau St., Ottawa.....	March and Nepean Tps.
Grenville Crushed Rock Co., Ltd.....	Merrickville.....	Oxford Tp.
Hagersville Contracting Co., Ltd.....	Hagersville.....	Walpole Tp.
Hagersville Crushed Stone Co.....	Hagersville.....	Oneida Tp.
Hagersville Quarries, Ltd.....	4 Flora St., St. Thomas.....	Walpole Tp.
Haldimand County Good Roads System.....	Hagersville.....	Rainham & Walpole Tp.
Hanover Cement & Stone Co.....	371 Bay St., Toronto.....	Walkerton.
Halliday, Fred.....	Quarries P.O., Ottawa.....	Gloucester Tp.
Hicks, Wm.....	933 15th St. E., Owen Sound.....	Owen Sound.
Higginson, Geo. and Son.....	Coldwater.....	Coldwater.
Hildreth, Chas.....	R.R. No. 4, Hamilton.....	Barton Tp.
Hourigan, Thomas L.....	Smith's Falls.....	Smith's Falls.
Innerkip Stone Quarry.....	Innerkip.....	Innerkip.
Keeling, James.....	1179 16th St. E., Owen Sound.....	Owen Sound.
Kingston Penitentiary.....	Portsmouth.....	Portsmouth.
Kirby, T. Sidney Co., Ltd.....	213 Sussex St., Ottawa.....	Gloucester Tp.
Lally, M., Estate of.....	Smithville.....	Smithville.
Law Construction Co., Ltd., The.....	107 Hillsdale Ave., Toronto.....	Windmill Point.
Lincoln County of, Rd. Department.....	St. Catharines.....	North Grimsby.
Longford Quarry Co., Ltd.....	6 Peter St., Orillia.....	Rama Tp.
MacGillivray, J. H.....	P.O. Box 149, Smith's Falls.....	South Elmsley.
Markus, Wm., Ltd.....	Pembroke.....	Pembroke Tp.
Marshall, Jas.....	Hamilton.....	Barton Tp.
McDonnell and Dibblee.....	416 St. James St., Montreal, Que.....	Bell's Corners.
McKay, Alex. L.....	2 Brown's Ave., Toronto.....	Owen Sound.

## The Stone Quarrying Industry—Limestone—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Oliver Rogers Stone Co., Ltd.....	841 Fourth Ave. E., Owen Sound...	Owen Sound.
Ontario Hydro Electric Commission.....	Toronto.....	Walkerton.
Ontario Reformatory Industries.....	Parliament Bldgs., Toronto.....	Guelph Tp.
Ontario Stone Corporation, Ltd.....	611 Excelsior Life Bldg., Toronto....	North Orillia.
Ottawa Improvement Commission.....	53 Queen St., Ottawa.....	Ottawa.
Pt. Anne Quarries, Ltd.....	Ft. of Jarvis St., Toronto.....	Point Anne.
Pt. Anne Quarries, Ltd.....	Ft. of Jarvis St., Toronto.....	Thurlow Tp.
Public Highways, Dept. of.....	Toronto.....	
Robertson, D. & Co., Ltd.....	201 Crown Office Bldg., Toronto.....	Milton.
Robillard, H. & Son.....	195 Nicholas St., Ottawa.....	Gloucester Tp.
Roddy & Monk.....	24 Elm Rd., Kingston.....	Kingston.
Routly, H. T.....	90 Jarvis St., Toronto.....	Sydney Tp.
Standard White Lime Co., Ltd.....	15 Douglas St., Guelph.....	Beachville.
Stormont, Dundas and Glengary, Counties of.....	Court House, Cornwall.....	Finch Tp.
Thames Quarry Co., Ltd., The.....	St. Mary's.....	St. Mary's.
Walker Bros.....	Thorold.....	Stamford Tp.
Wallace, R. & Sons.....	116 Patrick St., Kingston.....	Kingston.
Wattam, Geo. H.....	Shelburne.....	Amaranth Tp.
Webster and Trory.....	McIrvine Block, Main St., Galt.....	Galt.
Wehman, John.....	251 Divison St., Kingston.....	Kingston.
Wentworth, County of.....	Court House, Hamilton.....	Waterdown.
Woodhouse Crushed Stone Co., Ltd.....	Port Dover.....	Woodhouse Tp.
Wentworth Quarries, Ltd.....	Vinemount.....	Saltfleet Tp.
<b>MANITOBA—</b>		
Gillis Quarries, Ltd.....	Spruce and Richard Sts., Winnipeg..	Tyndall.
Tyndall Quarry Co., Ltd.....	1591 Erin St., Winnipeg.....	Winnipeg.
Winnipeg, City of.....	Winnipeg.....	Stony Mountain.
<b>BRITISH COLUMBIA—</b>		
Cons. Mining & Smelting Co., Ltd.....	Trail.....	Fife.
Powell River Co., Ltd.....	Powell River.....	Texada Island.







D-27

CANADA—DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH



ANNUAL REPORT

ON THE

MINERAL PRODUCTION OF  
CANADA

DURING THE CALENDAR YEAR

1924

Published by Authority of the Hon. J. A. Robb, M.P.,  
Acting Minister of Trade and Commerce



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1926

Price, 50 cents.

# LIST OF PUBLICATIONS

PREPARED IN THE

## MINING, METALLURGICAL AND CHEMICAL BRANCH, DOMINION BUREAU OF STATISTICS

### MINERAL PRODUCTION (Mining and Metallurgy).

#### General Reports—

#### Preliminary Reports (semi-annual) on the Mineral Production of Canada.

#### Annual Report on the Mineral Production of Canada. (In one volume).

PART ONE—PRODUCTION STATISTICS—General Statistical Review of the Mineral Production of Canada.

*Metals.*—Aluminium—Antimony—Arsenic—Chromite—Cobalt—Copper—Gold—Iron Ore—Iron, Pig—Lead—Mercury—Molybdenum—Nickel—Platinum and Palladium—Silver—Tin—Zinc.

*Non-Metals.*—Abrasives—Actinolite—Asbestos—Barytes—Coal—Coke—Feldspar—Fluorspar—Graphite—Gypsum—Iron Oxides—Magnesite—Magnesium Sulphate—Mica—Mineral Water—Natrol—Alunite—Natural Gas—Peat—Petroleum—Phosphate—Pyrites—Quartz—Salt—Sodium Carbonate—Sodium Sulphate—Talc.

*Structural Materials and Clay Products.*—Cement—Clay and Clay Products—Lime—Sand and Gravel—Sand-Lime Brick—Slate—Stone.

PART TWO—GENERAL STATISTICS.—Text and tables presenting general reviews of the mineral industry in Canada (a) by provinces; (b) by industries.

PART THREE—DIRECTORY.—List showing the names, head office and mine or plant addresses of all concerns operating in the mineral industry in Canada, arranged in alphabetical order by industrial groups.

#### Coal—

#### Monthly Report on Coal and Coke Statistics for Canada.

General review for the month with tables showing comparative data for the month and year to date, output by coal-mining districts and by provinces, imports and exports by ports and by kinds of coal. In this report there is also a section showing statistics on production, imports and exports of coke for the month and year to date by provinces.

#### Annual Report on Coal Statistics for Canada.

Text and tables showing, for Canada, and for each of the coal-producing provinces, historical and current data on output, tonnage lost, disposition of coal from the mines, domestic and foreign shipments, exports and imports by ports, consumption of coal, prices, employment, salaries and wages paid, power equipment, capital investment, etc.

#### Bulletins—

##### (a) PRODUCTION—

*Metals.*—Arsenic—Cobalt—Copper—Gold—Iron Ore—Lead—Nickel—Metals of the Platinum Group—Silver—Zinc—Miscellaneous Non-Ferrous Metals including Aluminium, Antimony, Chromite, Manganese, Mercury, Molybdenum, Tin, Tungsten.

*Non-Metals.*—Asbestos—Coal—Feldspar—Gypsum—Iron Oxides—Mica—Natural Gas—Petroleum—Quartz—Salt—Talc and Soapstone—Miscellaneous Non-Metallic Minerals including Actinolite, Barytes, Corundum, Fluorspar, Graphite, Grindstones, Magnesite, Magnesium Sulphate, Mineral Waters, Natrolalunite, Peat, Phosphate, Pyrites, Sodium Carbonate, Sodium Sulphate, Tripolite.

*Structural Materials.*—Cement—Clay and Clay Products—Lime—Sand and Gravel—Stone and Slate.

##### (b) ANNUAL INDUSTRIAL REVIEWS—

The Gold Industry—Copper-Gold-Silver Industry—Nickel-Copper Industry—Silver-Cobalt Industry—Silver-Lead-Zinc Industry.

##### (c) ANNUAL PROVINCIAL REVIEWS OF THE MINERAL INDUSTRY—

Nova Scotia—New Brunswick—Quebec—Ontario—Manitoba—Saskatchewan—Alberta—British Columbia—Yukon.

SEE INSIDE BACK COVER FOR PUBLICATIONS ON MANUFACTURES BASED CHIEFLY ON MINERALS.

CANADA—DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH

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1926

## NOTE ON STATISTICS OF PRODUCTION

In the collection of production data, the Dominion Bureau of Statistics makes a division between primary and secondary production. In the first-named class, there are separate sections for the collection of statistics on (a) **Agricultural Products**, (b) **Furs**, (c) **Fish**, (d) **Forest Products**, (e) **Mineral Products** and (f) **Construction**.

The scheme of classification used for the collection of data on the manufacturing industries of Canada provides for a grouping of producing concerns according to the principal component material of the major products made. For example, makers of leather goods are classified under "Animal Products"; the pulp and paper industry, under "Wood and Paper," etc.

In order that students of the Bureau reports on manufactures may have a true conception of the plan followed, an outline of the scheme of classification in use is given below:

### *Classification of Manufacturing Industries in Canada for the Collection of Production Statistics*

#### *Manufactures of:*

- (1) **Vegetable Products**, including—Coffee and Spices; Cocoa and Chocolate; Preserved and Canned Products; Pickles, Vinegar and Cider; Flour and Cereals; Bread and other Bakery Products; Macaroni and Vermicelli; Distilled and Brewed Liquors and Wines; Rubber Products; Starch and Glucose; Sugar; Tobacco Products; Linseed Oil and Oil Cake.
- (2) **Animal Products**, including—Fish and Fish Products; Dairy Factory Products; Meat and Meat Products; Leather and Leather Products; Furs and Fur Products.
- (3) **Textiles and Textile Products**, including—Cotton Textiles (Cloth, Yarn, Thread and Waste); Woollen Textiles (Cloth, Yarn, Blankets, Felt and Waste); Silk Products; Factory-made Clothing; Carpets, Rugs and Mats; Cordage, Rope and Twine.
- (4) **Wood and Paper**, including—Pulp and Paper Mill Products; Paper Goods, Printing, Publishing and Lithographing; Saw and Planing Mill Products; Furniture; Carriages, Wagons and Sleighs; Wooden Containers; Woodenware; Turned Wood Products; and the Output of Similar Wood-using Industries.
- (5) **Iron and Steel and their Products**, including—Pig Iron and Ferro-Alloys; Steel and Rolled Products; Castings and Forgings; Boilers and Engines; Agricultural Implements; Machinery; Automobiles; Auto Accessories; Bicycles; Railway Rolling Stock; Wire and Wire Goods; Sheet Metal Products; Hardware and Tools; Miscellaneous Iron and Steel Products.
- (6) **Manufactures of Non-Ferrous Metal Products**, including—Aluminium Products; Brass and Copper Products; Lead, Tin and Zinc Products; Manufactures of Precious Metals; Electrical Apparatus and Supplies; Miscellaneous Non-Ferrous Metal Products.
- (7) **Manufactures of Non-Metallic Mineral Products**, including—Aerated Waters; Asbestos and Allied Products; Cement Products and Sand-Lime Brick; Coke and By-Products; Gas, Illuminating and Fuel; Glass (blown, cut, ornamental, etc.); Monumental and Ornamental Stone; Petroleum Products; Miscellaneous Manufactured Non-Metallic Mineral Products, including (a) Artificial Abrasives; (b) Abrasive Products (c) Electrodes; (d) Fuel Briquettes; (e) Gypsum Products; (f) Mica Trimming.
- (8) **Chemicals and Allied Products**, including—Coal Tar and its Products; Acids, Alkalies, Salts and Compressed Gases; Explosives, Ammunition, Fireworks and Matches; Fertilizers; Medicinal and Pharmaceutical Preparations; Paints, Pigments and Varnishes; Soaps, Perfumes, Cosmetics and Toilet Preparations; Inks, Dyes, and Colour Compounds; Wood Distillates and Extracts.
- (9) **Miscellaneous Products**, including—Brooms and Brushes; Electric Light and Power; Musical Instruments, etc.

## PREFACE

Final data for 1924 given in this report show that the mineral production of Canada in that year had a total value of \$209,583,406. The total value shown in the Preliminary Report for 1924, issued February 23, 1925, was \$209,516,465, only a fraction of one per cent below the final totals.

Annual statistical reports on the mineral production of Canada have been published for many years, first by the Geological Survey, later by the Mines Branch of the Department of Mines, and, since 1921, by the Dominion Bureau of Statistics. The present report is issued in continuance of this series, certain new material having been introduced which it is believed will be found of value to the mineral industry.

The statistics relating to the different minerals and the general statistical tables have been prepared as formerly, and these have been supplemented by general reviews of the principal mineral industries, (e.g., the copper-gold industry, the silver-lead-zinc industry, the nickel-copper industry, etc.), and by a section on metallurgical works. In recent years, the value of statistics of this character, covering capital, labour, equipment, etc., has become more generally recognized and the demand for such information has greatly increased.

To meet a demand for the names and addresses of concerns operating in the mineral industry, a list has been prepared and is included in this report; this departure, adopted in 1922, will, it is hoped, be found of value.

Statistical reports on the mineral production of Canada issued by the Dominion Bureau of Statistics include the following publications: (a) Preliminary estimate of production issued on January 1 in each year; (b) Preliminary Report for the calendar year, printed in February; (c) Report on production during the six months ending June 30, distributed in August; (d) Bulletins giving finally revised production data for the calendar year on each mineral product, issued as the compilations are completed; (e) Annual Report on the Mineral Production of Canada, available towards the close of the year. Monthly reports on Coal Statistics are also issued on the fifteenth of each month, and a special annual report giving detailed information on the Canadian coal mining industry and on the importation and distribution of coal, is published in June.

The cordial thanks of the Bureau are tendered to the Dominion Department of Mines and to the several Provincial Departments of Mines, which have without exception, assisted materially in the preparation of the report. In reference to the co-ordination of mining statistics between the Provincial Departments and this Bureau, it has been found possible to arrange for the co-operative collection of monthly statistics of coal production with all the provinces in which such records are obtained, namely, Nova Scotia, New Brunswick, Saskatchewan and Alberta. In the field of general mining statistics, co-operative arrangements with the Ontario Department of Mines have been continued, thus preventing overlapping and duplication of work. All data collected by the Bureau on mining statistics are made available to the Dominion Department of Mines.

The thanks of the Bureau are also tendered to the mine and smelter operators, for assistance given and information made available. The railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data the receipt of which is gratefully acknowledged.

The report has been prepared under the direction of Mr. S. J. Cook, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch of the Bureau. Mr. W. H. Losee, B.Sc., who supervised the work, was assisted by Mr. B. R. Hayden and a staff of six clerks, in the checking and compilation of the returns and in the preparation of the material in the report.

R. H. COATS,  
Dominion Statistician.

DOMINION BUREAU OF STATISTICS, OTTAWA,  
December 1, 1925.



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## PART ONE

### PRODUCTION STATISTICS

*The first section of this report deals with the statistics of the Mineral Production of Canada. Where possible, tables showing historical data, and World's Production have been shown.*

Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1923 and 1924

		1923			1924		
		Quantity	Value	Per cent of total	Quantity	Value	Per cent of total
METALLIC							
Arsenic As <sub>2</sub> O <sub>3</sub> .....	Lb.	6,421,587	\$ 626,815	0.29	4,621,567	348,293	0.16
Bismuth.....	"				12,863	27,913	0.01
Chromite Cr <sub>2</sub> O <sub>3</sub> .....	Tons	3,558	52,650	0.03			
Cobalt, metallic and contained in oxide	Lb.	888,061	2,530,974	1.18	948,704	1,682,395	0.80
Copper.....	"	86,881,537	12,529,186	5.85	104,457,447	13,604,538	6.50
Gold.....	Fine oz.	1,233,341	25,495,421	11.92	1,525,382	31,532,443	15.05
Iron pig, from Canadian ore.....	Tons	20,739	432,298	0.20	3,710	92,750	0.04
Iron ore sold for export.....	"	5,670	20,279	0.01	1,498	3,771	
Lead.....	Lb.	111,234,466	7,985,522	3.73	175,485,496	14,221,345	6.79
Manganese ore.....	Tons	200	1,400		584	4,088	
Molybdenite.....	Lb.				18,739	9,370	
Nickel.....	"	62,453,843	18,332,077	8.56	69,536,350	19,470,178	9.29
Palladium.....	Fine oz.	1,732	138,560	0.06	8,923	811,993	0.39
Platinum.....	"	1,217	141,826	0.07	9,186	1,091,427	0.52
Rhodium, Osmium, Iridium.....	"	304	45,000	0.02	593	51,120	0.02
Silver.....	"	18,601,744	12,067,509	5.64	19,736,323	13,180,113	6.29
Zinc.....	Lb.	60,416,240	3,991,701	1.86	98,909,077	6,274,791	3.00
Total.....			84,391,218	39.42		102,406,528	48.86
NON-METALLIC							
Actinolite.....	Tons	53	583		90	1,225	
Asbestos.....	"	231,482	7,522,506	3.51	225,744	6,710,830	3.20
Barytes.....	"	409	8,548		151	3,308	
Bituminous sands.....	"				531	2,127	
Coal.....	"	16,990,571	72,058,986	33.66	13,638,197	53,593,188	25.58
Feldspar.....	"	29,225	237,601	0.11	44,804	358,540	0.17
Fluorspar.....	"	139	1,732		76	1,343	
Garnets.....	"	1,250	100,000	0.05	360	7,200	
Graphite.....	"	1,113	67,873	0.03	1,334	76,117	0.04
Grindstones.....	"	2,014	80,083	0.04	2,691	137,848	0.06
Gypsum.....	"	578,301	2,243,100	1.05	646,016	2,208,108	1.06
Magnesite.....	"	4,801	134,382	0.06	3,873	101,356	0.05
Magnesium sulphate.....	"	121	6,580				
Mica.....	"	3,525	326,974	0.15	4,091	357,272	0.17
Mineral water.....	Imp. Gal.	232,451	16,455		209,353	15,421	0.01
Natro-alunite.....	Tons	15	750				
Natural gas.....	M cu. ft.	15,960,583	5,884,618	2.75	14,881,336	5,708,636	2.73
Oxides, iron.....	Tons	10,424	129,636	0.06	7,766	91,160	0.04
Petroleum, crude.....	Bbl.	170,169	522,018	0.24	160,773	467,400	0.22
Phosphate.....	Tons	30	600				
Pyrites.....	"	28,591	113,020	0.05	23,552	95,620	0.05
Quartz.....	"	264,076	599,250	0.28	150,896	323,156	0.15
Salt.....	"	202,387	1,713,516	0.80	267,797	1,374,780	0.66
Sodium carbonate.....	"	265	3,975		510	5,173	
Sodium sulphate.....	"	733	10,189		1,083	6,004	
Talc and soapstone.....	"	10,366	150,507	0.07	11,332	154,480	0.07
Tripolite.....	"	130	3,250		33	838	
Volcanic ash.....	"				245	1,103	
Total.....			91,936,732	42.95		71,796,009	34.26
STRUCTURAL MATERIALS AND CLAY PRODUCTS							
Cement, portland and puzzolan.....	Brl.	7,543,589	15,064,661	7.04	7,498,644	13,398,411	6.39
Clay products—							
Brick—Soft mud process	Face..... M				10,831	185,248	0.09
	Common..... " "				50,079	746,044	0.36
Stiff mud process	Face..... " "				80,565	1,842,224	0.88
(wire cut)	Common..... " "	388,647	6,701,317	2.49	124,556	1,880,631	0.90
Dry press	Face..... " "				35,203	761,572	0.36
	Common..... " "				12,794	168,043	0.08
Fancy or ornamental brick.....	"				755	98,469	0.05
Sewer brick.....	"				2,690	41,775	0.02
Fire brick from domestic clay.....	"	6,122	295,037		4,327	209,256	0.10
Fireclay.....	Tons	2,685	24,158		3,645	26,258	0.01
Kaolin.....	"	163	2,369				
Fireclay blocks and shapes.....	"		81,345			51,273	0.02
Structural tile—Hollow blocks (including fire-proofing and load-bearing tile).....	"		1,209,605		96,818	926,777	0.44
Roofing tile.....	No.				7,377	917	
Floor tile (quarries).....	Sq. ft.				444,601	35,608	0.02
Drain tile.....	M	10,599	322,314		15,137	409,369	0.20
Sewer pipe (including copings, flue lining, etc.).....	Tons	70,252	1,616,324		76,355	1,594,280	0.76
Pottery, glazed or unglazed.....	"		229,547			238,342	
Lime.....	Bush.	10,035,319	3,266,608	1.53	9,136,952	3,178,541	1.51
Sand and gravel.....	Tons	12,752,515	3,016,518	1.41	11,603,500	3,181,083	1.52
Slate.....	"	1,836	17,289				
Stone—							
Granite.....	Tons	398,432	1,159,303	0.54	419,971	1,013,345	0.47
Limestone.....	"	3,687,663	4,475,921	2.06	4,249,061	4,831,684	2.35
Marble.....	"	2,473	201,518	0.09	4,379	322,455	0.14
Sandstone.....	"	22,766	66,547	0.03	91,603	240,273	0.10
Total.....			37,751,381	17.63		35,380,869	16.88
Grand total.....			214,079,331	100.00		209,583,406	100.00

Table 2.—Increase or Decrease in Quantities and Values of Mineral Products from Canadian Sources, in 1924 as compared with 1923

		Increase (+) or Decrease (-)		Increase (+) or Decrease (-)	
		Quantity	%	Value	%
METALLIC					
Arsenic.....	Lb.	- 1,800,020	- 28-1	- 278,522	- 44-5
Bismuth.....	"	+ 12,863		+ 17,933	
Chromite.....	Tons	3,558		52,630	
Cobalt, metallic and contained in oxide.....	Lb.	+ 63,643	+ 6-8	+ 848,579	+ 33-6
Copper.....	"	+ 17,575,910	+ 20-2	+ 1,075,352	+ 8-5
Gold.....	Fine oz.	+ 292,041	+ 23-6	+ 6,037,022	+ 23-6
Iron pig from Canadian ore.....	Tons	+ 17,029	+ 78-3	+ 339,548	+ 78-6
Iron ore sold for export.....	"	+ 4,262	+ 75-2	+ 16,508	+ 81-5
Lead.....	Lb.	+ 64,251,033	+ 57-7	+ 6,235,823	+ 78-0
Manganese.....	Tons	+ 384	+ 192-0	+ 2,688	+ 192-0
Molybdenite.....	Lb.	+ 18,739		+ 9,370	
Nickel.....	"	+ 7,082,507	+ 11-3	+ 1,138,101	+ 6-2
Palladium.....	Fine oz.	+ 7,191	+ 415-1	+ 673,433	+ 486-0
Platinum.....	"	+ 7,969	+ 654-8	+ 949,601	+ 669-5
Rhodium, Osmium, Iridium.....	"	+ 289	+ 95-0	+ 6,120	+ 13-6
Silver.....	"	+ 1,134,579	+ 6-0	+ 1,112,604	+ 9-2
Zinc.....	Lb.	+ 38,492,837	+ 63-7	+ 2,283,090	+ 57-1
Total.....				+ 18,015,310	+ 21-3
NON-METALLIC					
Actinolite.....	Tons	+ 37	+ 69-8	+ 642	+ 110-1
Asbestos.....	"	+ 5,738	+ 2-5	+ 811,676	+ 10-7
Barytes.....	"	+ 258	+ 63-0	+ 5,240	+ 61-3
Bituminous sands.....	"	+ 531		+ 2,127	
Coal.....	"	+ 3,352,374	+ 19-7	+ 18,464,998	+ 25-7
Feldspar.....	"	+ 15,579	+ 53-3	+ 120,939	+ 50-9
Fluorspar.....	"	+ 63	+ 45-3	+ 389	+ 22-5
Garnets.....	"	+ 890	+ 71-2	+ 92,800	+ 92-8
Graphite.....	"	+ 221	+ 19-8	+ 8,244	+ 12-1
Grindstones.....	"	+ 677	+ 33-6	+ 50,741	+ 63-3
Gypsum.....	"	+ 67,715	+ 11-7	+ 34,992	+ 1-5
Magnetosite.....	"	+ 928	+ 19-3	+ 33,026	+ 24-5
Magnesium sulphate.....	"	+ 121		+ 6,580	
Mica.....	"	+ 566	+ 16-1	+ 30,298	+ 9-2
Mineral water.....	Imp. Gal.	+ 23,098	+ 9-9	+ 1,034	+ 6-2
Natro-alumite.....	Tons	+ 15		+ 750	
Natural gas.....	M cu. ft.	+ 1,079,247	+ 6-7	+ 175,982	+ 2-9
Oxides, iron.....	Tons	+ 3,158	+ 30-2	+ 38,476	+ 29-6
Petroleum, crude.....	Bbl.	+ 9,396	+ 5-5	+ 54,618	+ 10-4
Phosphate.....	Tons	+ 30		+ 600	
Pyrites.....	"	+ 5,039	+ 17-6	+ 17,400	+ 15-3
Quartz.....	"	+ 113,180	+ 42-8	+ 276,094	+ 46-0
Salt.....	"	+ 5,581	+ 2-7	+ 338,736	+ 19-7
Sodium carbonate.....	"	+ 245	+ 92-4	+ 1,198	+ 30-1
Sodium sulphate.....	"	+ 350	+ 47-7	+ 4,185	+ 41-0
Talc.....	"	+ 166	+ 9-4	+ 3,973	+ 2-6
Tripolite.....	"	+ 97	+ 74-6	+ 2,412	+ 74-2
Volcanic ash.....	"	+ 245		+ 1,103	
Total.....				- 20,140,723	- 21-9
STRUCTURAL MATERIALS AND CLAY PRODUCTS					
Cement.....	Brl.	- 44,965	- 0-5	- 1,666,250	- 11-0
Clay products—					
Brick—Soft mud process Face.....	M				
Common.....	"				
Stiff mud process Face.....	"				
(wire cut) Common.....	"				
Dry press Face.....	"	- 71,174	- 18-3	- 978,320	- 14-5
Common.....	"				
Fancy or ornamental brick.....	"				
Sewer brick.....	"				
Fire brick from domestic clay.....	"	- 1,795	- 29-3	- 85,781	- 29-0
Fire clay.....	Tons	+ 960	+ 35-7	+ 2,100	+ 8-6
Kaolin.....	"	+ 163		+ 2,369	
Fire clay blocks and shapes.....	"			+ 30,072	+ 36-9
Structural tile—Hollow blocks (including fire proofing and load-bearing tile).....	No.				
Roofing tile.....	"				
Floor tile (quarries).....	sq. ft.)			- 246,303	- 20-3
Drain tile.....	M	+ 4,538	+ 42-8	+ 86,055	+ 16-6
Sewer pipe (including copings, flue linings, etc.).....	Tons	+ 6,103	+ 8-6	+ 22,044	+ 1-3
Pottery, glazed or unglazed.....	"			+ 8,795	+ 3-8
Lime.....	Bush.	- 898,367	- 8-9	- 88,067	- 2-6
Sand and gravel.....	Tons	+ 1,149,015	+ 9-0	+ 164,565	+ 5-4
Slate.....	"	+ 1,836		+ 17,289	
Stone.....	"	+ 656,680	+ 15-9	+ 504,468	+ 8-5
Total.....				- 2,370,512	- 6-2
Grand total.....				- 4,495,925	- 2-9

# MINERAL PRODUCTION OF CANADA-1924

% of output values by Provinces	Provincial Sources by Principal Minerals	% of output values by Kinds
<p>QUEBEC 9.12</p>	<p><b>GOLD</b></p> <p>ONTARIO 82% B.C. 16% YUKON 2%</p> <p><b>SILVER</b></p> <p>ONTARIO 57% B.C. 41% YUKON 1% QUE 1%</p>	<p>OTHERS 2.17 SALT 0.66 COBALT 0.80 GYPSUM 1.06 LIME 1.51 SAND &amp; GRAVEL 1.52 NATURAL GAS 2.73</p>
<p>ALBERTA 10.61</p>	<p><b>LEAD</b></p> <p>BRITISH COLUMBIA 96% QUE 1% ONT 3%</p> <p><b>ZINC</b></p> <p>BRITISH COLUMBIA 97% QUE 3%</p> <p><b>COBALT</b></p> <p>ONTARIO 100%</p>	<p>ZINC 3.00 STONE 3.06 ASBESTOS 3.20</p>
<p>NOVA SCOTIA 11.38</p>	<p><b>NICKEL</b></p> <p>ONTARIO 100%</p> <p><b>COPPER</b></p> <p>BRITISH COLUMBIA 63% QUE 2% ONT 35%</p>	<p>CLAY PRODUCTS 4.40 SILVER 6.29</p>
<p>BRITISH COLUMBIA 24.94</p>	<p><b>COAL</b></p> <p>N.S. 41% SASK 2% N.B. 2% BC 20% ALTA 35%</p> <p><b>NATURAL GAS</b></p> <p>ONTARIO 67% N.B. 2% ALBERTA 31%</p> <p><b>ASBESTOS</b></p> <p>QUEBEC 99% ONT 1%</p>	<p>CEMENT 6.39 COPPER 6.50 LEAD 6.79</p>
<p>ONTARIO 41.29</p>	<p><b>GYPSUM</b></p> <p>N.S. 41% MAN 16% ONT 21% N.B. 22%</p> <p><b>SALT</b></p> <p>ONTARIO 97% N.S. 3%</p> <p><b>SAND AND GRAVEL</b></p> <p>ONTARIO 64% N.S. 18% H.S. 2% M.A.T. 2% SASK 2% ALTA 2% B.C. 11% QUE 13%</p> <p><b>CLAY PRODUCTS</b></p> <p>ONTARIO 55% MAN 14% N.S. 4% B.C. 5% ALTA 6% QUE 26%</p> <p><b>CEMENT</b></p> <p>ONTARIO 42% MAN 6% ALTA 7% B.C. 9% QUEBEC 36%</p> <p><b>STONE</b></p> <p>QUEBEC 46% ONT 44% MAN 1% N.B. 2% B.C. 6%</p> <p><b>LIME</b></p> <p>ONTARIO 58% QUE 22% N.S. 1% MAN 4% B.C. 12%</p>	<p>NICKEL 9.29 GOLD 15.05 COAL 25.58</p>

# DOMINION BUREAU OF STATISTICS

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## ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA DURING THE CALENDAR YEAR, 1924

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### GENERAL REVIEW

Canada's mineral industry in 1924 yielded products valued in the aggregate at \$209,583,406, a total which has only been exceeded in three previous years; in 1923, when the output was valued at \$214,079,331; in 1920, when the peak of \$227,859,665 was reached; and in 1918 when the total value of \$211,301,897 was recorded. Metallic mineral products attained an output not previously equalled in times of peace and exceeded only by the records established during the last three years of the war when the production of non-ferrous metals was at its peak. Primary metals produced from Canadian ores during 1924 reached a total value of 102.40 million dollars, an advance of 18.01 million dollars over the total for the preceding year. Non-metallic minerals and structural materials on the other hand showed lower aggregate values than in the preceding year. Most of the non-metals showed only slight recessions from the totals for 1923 and a few, notably feldspar, graphite, and mica showed increased values; but continued labour difficulties in the coal fields so reduced production that the total value of non-metallic minerals including coal, dropped to 71.79 million dollars from a total of 91.93 million dollars in 1923. Delayed building programs throughout Canada restricted the output of structural materials and clay products so that the totals for these products were less than in 1923. Nevertheless, the mineral industry of Canada representing a capital investment of about a half-a-billion dollars and employing upwards of 60,000 hands, yields place only to agriculture and forests production among the primary industries. It is a basic industry with a long and creditable production record. The value of the output per capita has risen from \$2.23 in 1886 to a maximum of \$26.40 in 1920 and the value of production has grown in the same years from 10 million dollars to a high point of 228 million dollars. The fact that every province contributes annually to the output serves but to emphasize the variety and wide distribution of Canada's mineral products, and the continued advances, particularly in recent years, have brought the mining industry of Canada into great prominence.

Among the metals, increased outputs in comparison with the totals for the previous year were recorded in the case of cobalt, copper, gold, lead, nickel, silver and zinc. In the non-metallic field, advances were made in the production of feldspar, graphite, gypsum, mica and in the quantity of salt produced. Lower prices reduced the total values recorded for gypsum and salt below those of the previous year. Among the structural materials, the quantities of fire-clay, drain tile, sewer pipe and building stone produced were greater than in 1923. Due to the drop in prices of sewer pipe, the total value of this commodity was slightly below the total reported in 1923.

Considered by groups, and compared with corresponding data for 1923, metals showed an advance of 21.3 per cent to a total value of \$102,406,528; including coal, the value of the non-metals produced dropped 21.9 per cent to a total of \$71,796,009; while the structural materials and clay products group showed a 6.2 per cent loss in value to a total of \$35,380,869. Canada's mineral output values in 1924 included: metallics, 48.86 per cent; non-metallics, 34.26 per cent; structural materials, 16.88 per cent. In 1923, metallics made up only 39.42 per cent of the total while non-metals claimed 42.95 per cent and structural materials and clay products accounted for 17.63 per cent.

Ontario was again the principal mineral-producing province of Canada, the value of its output in 1924 being determined at \$86,398,656 or 41.22 per cent of the total for Canada. British Columbia came second with a mineral production valued at \$52,298,533 or 24.94 per cent of the total for Canada. Nova Scotia contributed \$23,820,353 or 11.38 per cent of the production, winning third place over Alberta which held this position in 1923. Alberta's output was valued at \$22,344,940, representing 10.61 per cent; Quebec's minerals were valued at \$19,136,504 or 9.14 per cent; and New Brunswick, Manitoba, Saskatchewan and Yukon Territory followed in the order named. In 1923 Yukon Territory held sixth place, but in 1924 it dropped to the end of the list; this was due in part to the reduction in the output of placer gold, but more particularly to the fact that shipments of silver-lead-zinc ore accounted for in 1924 were much less in quantity than those reported in the preceding year. Climatic conditions, however, are an important factor in the movement of Yukon ores, and the totals from year to year therefore are not subject to the same strict comparisons that may be made in the case of other areas.

Ontario, with an area of 407,262 square miles, occupies first place among the mineral-producing provinces of the Dominion, especially in the production of gold, silver and nickel. Here, also are produced large quantities of copper, most of the world's cobalt, some lead and iron, and small quantities of platinum and its related metals as well as natural gas, salt, gypsum, quartz, crude petroleum, feldspar, talc, mica, garnets and pyrites. In the class of building materials there is also a large production of portland cement, bricks and other clay products, building stone, sand and gravel, and quick and hydrated lime.

Individual mines in Ontario are said to own the largest deposits in America of talc, feldspar, mica, and graphite. Porcupine and Kirkland Lake are two of the most productive gold camps in the world, and in Cobalt and the South Lorrain areas the world's richest silver camps are located.

British Columbia's claim to distinction in the mineral field is based on the outputs for a long period of years of coal, copper, lead, gold, silver, and zinc; other minerals produced in less amounts include: cement, sand and gravel, lime, building stone, clay products, quartz, pyrites, fluospar and gypsum, and in recent years sodium carbonate and magnesium sulphate.

Production in 1924 surpassed all previous records, and in all phases of mining—prospecting, development and production; lode mining, placer mining, and coal mining—great progress has been and still is being made in the Pacific Coast province. The Sullivan mine of the Consolidated Mining and Smelting Company has now become recognized as one of the greatest lead zinc mines in the world. It is also highly satisfactory that the metals, silver, lead and zinc contained in the crude ore of this mine are now being smelted, refined and prepared in finished condition for the market at the company's metallurgical works at Trail.

Nova Scotia, producing coal, gypsum, clay products, gold, building stone, salt and several other mineral products of less importance, attained third place among the mineral-producing provinces of Canada in 1924. Production of coal in Nova Scotia was less by about one million tons than in the preceding year.

Alberta's chief mineral product is coal, but the list also includes natural gas, clay products, lime, crude petroleum, cement, stone, sand and gravel and bituminous sands. Labour difficulties in the coal fields restricted the output, and this cause alone was sufficient to place Alberta fourth among the mineral-producing provinces, whereas in 1923 Alberta claimed third place.

While metal mining in Quebec is yet of less importance than the production of the non-metallic minerals, the metallic list includes lead, zinc, silver, gold and chromite. Asbestos is the chief non-metallic mineral produced and the output of this commodity from the mines in the eastern townships represents about 85 per cent of the world's production. Feldspar, and mica, are produced each year in considerable amounts. Other non-metallic minerals found in this province are magnesite, iron oxide, quartz, and soapstone, and there is a very considerable production of cement, brick and other clay products, lime, kaolin, slate, building stone, sand and gravel. Activity in prospecting the Rouyn field has resulted in the proving-up of many claims, and the establishment of a very considerable metal mining industry in this area yielding copper and gold, is anticipated.

The New Brunswick minerals are non-metallics exclusively. Coal is the principal product. Other mineral products obtained in this province are grindstones, gypsum, petroleum, natural gas, clay products, lime, stone, sand and gravel, and recently there has been some movement towards the development of oil shales.

Manitoba and Saskatchewan are primarily agricultural provinces, and the annual production of minerals in each of these areas is valued usually between one and two million dollars. The total area of Manitoba is 251,882 square miles. Of this, approximately two-fifths, in the southern and south-western sections of the province, is agricultural and is the main source of the non-metallic minerals. The remaining three-fifths is Pre-Cambrian, and in it are being mined, copper, gold and other metallic minerals. Transportation from the northern metal mining fields is costly, and the development of properties in this area has been retarded for this reason. Development work has been renewed by companies who are in strong financial positions and the prospects for increased production are improving. The principal items of interest in the mineral industry of Saskatchewan, are coal, sodium sulphate, clay products and sand and gravel. Lignite is found in extensive deposits most of which are readily workable. There is also in this province a supply of high-grade pottery clay. Shipments from this deposit have been made to Alberta in recent years, but hope is held out that this deposit may yet prove the basis of a ceramic industry within the province.

As already noted, production from the Yukon in 1924 was less in value than in the preceding year, due to some extent to the reduction in the amount of placer gold produced, but more particularly to the lessened tonnages of silver-lead ore reported in that year. Shipments from Keno Hill are only made during the season of navigation and owing to the long haul it is impossible to obtain records from year to year that are absolutely comparable. In the case of Yukon production, only records over a period of three years should be considered.

Mention has been made of the inflation in prices during and immediately after the war, and in the study of production records, shown in terms of money values, the trend in prices must be taken into consideration. The Internal Trade Branch of the Bureau has developed a commodity price index based on the prices prevailing in 1913; prices in that year are represented by the figure 100, and the index for subsequent years is expressed as a percentage of the prices prevailing in 1913. Several methods of grouping items have been adopted so that index numbers for many different groups of commodities are available, as well as a general index based on the prices of all commodities entering into the compilation. Taking the average price for 1913 as a base of 100, the index for non-ferrous metals stood at 94.5 in January, 96.2 in February, 98.1 in March. During the next four months it hovered between 93.1 and 94.7 and then rose in August to 96.5 and in December to 99.8. That is to say, the average prices of non-ferrous metals in Canada during 1924 were from 3 to 4 per cent lower than the prices prevailing for these commodities in 1913. On the other hand, the index for non-metallic minerals was approximately 85 per cent in excess of the 1913 average, but during the closing months of the year there was an appreciable drop in the index number for these commodities. The non-metallic group includes such materials as coal, gas, lime, brick, stone, sulphur, etc.

Iron and steel prices declined more than those for other mineral products. From 168.5 in January, the index dropped consistently each month during the year until it stood at 155.2 in November. Lower prices of iron and steel and the decreased production of these commodities were statistical marks of a very considerable depression.

Seventeen mineral products reached a production value of one million dollars or over, in Canada during 1924 and contributed 97.83 per cent of the total recorded value of the mineral production of Canada in that year. In order of total values these were, coal, at \$53,593,988; gold, nickel, lead, copper, cement, silver, clay products (including brick, tile and pottery), asbestos, stone, zinc, natural gas, sand and gravel, lime, gypsum, cobalt, and salt the output of which was valued at \$1,374,780.

In the following paragraphs the production of each of these commodities is considered in further detail, the metals being reviewed first, then the non-metals, and finally the structural materials and clay products. Increased production from Ontario gold mines was the principal cause of the great advance in the amount of gold produced in Canada during 1924 when a new record output was established at 1,525,382 fine ounces worth \$31,532,443, an increase of 292,041 fine ounces or 23.6 per cent over the totals for the previous year. Ontario contributed 84.40 per cent of the total and British Columbia mines yielded 16.10 per cent: the balance was derived from mines in Nova Scotia, Quebec, Manitoba, and the Yukon. Since 1914, Ontario has become by far the largest producer of gold in Canada. This remarkable increase has been brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The decline in production during 1917 and 1918

was due to the abnormal conditions created by the war. There was a marked recovery in 1919 and this developed in the following years to a maximum in 1924. Power shortage in northern Ontario during the earlier months of 1923 seriously interfered with production, but the provision of adequate power facilities later in the year definitely removed the possibility of further power shortage.

Two companies, the International Nickel Company and the Mond Nickel Company produced nickel-copper ores throughout the year, and operated their smelters in the Sudbury area. The British America Nickel Corporation was forced into liquidation in July and operations at their mine, smelter and refinery were discontinued. In spite of this loss, the output of nickel, determined as the nickel content of matte made in the Sudbury smelters together with small quantities contained in south Ontario smelter residues exported, advanced 7.08 million pounds to 69,536,350 pounds which, valued at the average New York market price of 28 cents for refined nickel, would be worth \$19,470,178. Possibly, sales of refined nickel from the Canadian refineries would be a better measure of nickel production and particularly of the nickel output value, but it has been customary in past years to quote as the production of nickel, the nickel content of smelter matte produced during the year together with the comparatively small amounts of nickel contained in products from the south Ontario smelters, and for convenience the same method has been retained.

New lead production records have been established in Canada in each of the past four years. By far the greater part of the output each year is from the Trail smelter of the Consolidated Mining and Smelting Company; but the production in Ontario by the Kingdon Mining, Smelting and Manufacturing Company at Galetta and the output from the Yukon Territory add to the total. Including all lead from these sources, the total production in 1924 reached 175,485,499 pounds valued at \$14,221,345, an increase of 64,251,033 pounds or 57.7 per cent above the quantity produced in 1923 and an advance of \$6,235,823 or 78.0 per cent above the value reported in the previous year.

Copper contained in matte produced, by the nickel-copper smelters of Ontario constituted about one-third of the total Canadian production; the output of blister copper from the Granby smelter along with a comparatively small amount from the Trail smelter contributed approximately another third; the remainder was made up of the recoverable copper from British Columbia and Quebec ores treated in United States smelters; the greater part of this balance being credited to British Columbia ores. Copper production for the year as thus computed totalled 104,457,447 pounds which, valued at the average prevailing price for copper, was estimated to be worth \$13,604,538; this was an advance of 20.2 per cent above the 86,881,537 pounds in 1923. Receding prices made the increase in value over the total for the preceding year somewhat less than it would have been if copper prices had been maintained at their 1923 level. Production for the year was valued at an advance of 8.5 per cent or more than a million dollars above the total for 1923.

Silver production showed an advance in 1924 of 1,134,579 ounces to a total of 19,736,323 fine ounces valued at \$13,180,113. High prices for silver made the increased production worth 9.2 per cent more than the total reported for 1923. Silver from the Cobalt area, including the bullion produced in the reduction works at Cobalt and at the south Ontario smelters, as well as the silver contained in cobalt-bearing ores exported, made up slightly more than half the total. Practically all the rest was recovered from British Columbia ores treated at Trail or in United States smelters. The continued success of the South Lorrain silver mines in Ontario and the production from such properties as the Premier silver mine in the Portland Canal area in British Columbia, were important factors in building up the output of silver during the year.

Continued development of the world famous Sullivan mine in British Columbia resulted in the establishment of another high record in the output of zinc in 1924. Production of zinc concentrates was in excess of smelter capacity and large quantities were exported to Belgium and the United States for treatment. Including the recoverable zinc in concentrates exported and the refined zinc made at Trail, production during the year reached a total of 98,909,077 pounds valued at \$6,274,791, an advance of 38,492,837 pounds or 63.7 per cent above the quantity produced in 1923, and \$2,283,090 or 57.1 per cent above the value reported for that year. While the price of zinc declined greatly in 1923 there was little change in the monthly average price quotations throughout 1924. Production of zinc from Canadian ores has advanced steadily each year since 1916 in which year production amounted to 23,364,760 pounds. The output in 1924 was more than four times this sum.

Sales of cobalt and its products in the form of metal, oxides and salts and in residues exported during 1924 comprised 948,704 pounds of contained metal, for which the producers received \$1,682,395.

Five non-metallic minerals were produced in sufficient volume to bring each of their total values above the million-dollar mark, and to put them among the 17 principal minerals listed above; these were coal, asbestos, natural gas, gypsum and salt. Production of coal from Canadian mines in 1924 amounted to only 13,638,197 short tons marking a loss of 3.35 million tons from the total reported in the preceding year. Lower average values per ton and the decreased production, reduced the aggregate value of the output to \$53,593,988 as compared with \$72,058,986 reported in 1923. Reductions in output were general, and while the production from Nova Scotia mines was a million tons less than in 1923, the output of 5,557,441 tons placed that province in the premier position among the Canadian coal-producing areas while Alberta, which in 1923 had produced 6,854,397 tons of coal, reported an output of 5,189,729 tons in 1924, thus dropping into second place. British Columbia, third in output tonnage, and a leader in the export of coal, more nearly maintained its position producing 2,193,667 tons in 1924 as compared with 2,823,306 tons in 1923. Production of coal in Canada during 1924 included 9,483,732 tons of bituminous coal, 590,168 tons of sub-bituminous and 3,564,297 tons of lignite. Canada's consumption of coal in 1924 amounted to only 29,254,137 short tons or an average of 3.171 tons per capita as compared with a total of 36,060,915 tons averaging 3.970 tons per capita in 1923. Of this total coal used, 42.8 per cent was drawn from Canadian mines, 56.1 per cent from the United States and 1.1 per cent from Great Britain. Very small quantities were also imported from other countries. Coal from Canadian mines constituted an increasing percentage of the total in the years 1918 to 1920 and again in 1922; in the latter year 50 per cent of the total consumption was of Canadian origin. In 1921, 1923 and 1924 the proportion of Canadian coal dropped to 41.0 per cent, 41.8 per cent and 42.8 per cent, respectively.

In the asbestos industry, shipments were somewhat less than in 1923 amounting to 225,744 tons valued at \$6,710,830, a loss of 2.5 per cent in quantity and 10.7 per cent in value from the totals for the previous year. Production by some companies was fairly well maintained, but lower prices prevailed during the year and a slight depression was quite noticeable throughout the industry.

Ontario and Alberta each produced more than 7,000,000 thousand cubic feet of natural gas in 1924, the increase in production in Alberta very nearly bringing the output from that province up to the total for Ontario. There was also a small production in New Brunswick and Manitoba. From all these sources the natural gas produced amounted to 14,881,336 thousand cubic feet valued at \$5,708,636. Both in quantity and value, production of natural gas in 1924 was less than in the preceding year. Ontario's output was about a million thousand cubic feet less than in the preceding year; Alberta's production was only slightly below the output in 1923, and because of the higher prices the value of Alberta's output reached a slightly higher total than in 1923.

Improvement in the production of gypsum has marked the records for each of the past four years. In 1921, production amounted to 386,550 tons; in 1924, the total reported was 646,016 tons valued at \$2,208,108. Gypsum is shipped in several different forms: lump, crushed, fine ground, or calcined. Nova Scotia is the principal source of supply, production in that province in 1924 amounting to 441,752 tons. Ontario produced 88,121 tons; New Brunswick, 86,738 tons; Manitoba, 29,375 tons; and British Columbia, 30 tons. In computing the production of gypsum, the quantities reported in the different forms are added; the values are those given as at point of shipment. About two-thirds of the output is exported annually.

Salt reached a slightly higher tonnage in 1924, but owing to the low prices prevailing in that year, the total value of the output was somewhat below the figures reported in 1923. Production amounted to 207,979 tons valued at \$1,374,780, an increase of 2.7 per cent in quantity and a reduction of 19.7 per cent of the value. Most of the production is obtained from the salt wells of western Ontario, but about 2 per cent of the Dominion output is produced from the Malagash mine in Nova Scotia.

Structural materials mentioned among the 17 principal mineral products were cement, clay products, stone, sand and gravel and lime.

While cement consumption in Canada was greater in 1924 than in the preceding year, sales of cement were slightly below the totals for 1923 both in quantity and value. Exports showed a marked decrease and imports advanced. Prices of cement were lower in 1924 than in the preceding year.

Following a conference with the Executive of the Canadian National Clay Products Association and representatives of the Ontario and Dominion Departments of Mines, the Bureau classification of clay products was modified and very considerably improved during the year. Comparison of 1924 statistics compiled on the new plan with the figures for 1923 output can only be made in the aggregate, but the advantage gained in the revision of the classification more than offsets the slight inconvenience occasioned by the change. Stiff mud process, face and common brick produced during the year reached a value of \$3,722,855, while soft mud process brick sold during the year had a total value of \$931,292. Dry press and fancy brick were valued at \$1,028,075. Structural tile reached a value of \$963,302; drain tile, \$409,369; pottery from Canadian clays, \$238,342; and sewer pipe, \$1,594,280. The figures for drain tile and pottery showed slight advances over the totals for 1923 and the production of sewer pipe was also greater, but the total value was less than in 1923. There was an increase of 15.9 per cent in the quantity of building stone produced during 1924 and an advance of 8.5 per cent in its total value. Sand and gravel were produced in slightly less quantities, but the value of the output was a little greater than in 1923. Production of building stone, and sand and gravel in Canada is wholly dependent upon the trend in building throughout the Dominion—when construction is progressing the output of stone, and sand and gravel shows marked improvement, and in times of depression in the building trades there is a corresponding reduction in the output of these building materials.

Lime production also follows the trend of building operations. In 1924, the output of lime in Canada amounted to 9,136,952 bushels including both quick and hydrated lime. This production was valued at \$3,178,541. Both in quantity and in value the totals were less than the figures recorded in the preceding year.

At the close of 1923 it was noted that greater tonnages but lower unit prices were the characteristic features of the mineral production in that year. Stabilization of industry generally, occurred in 1923 and 1924, but the trend towards definitely improved production was scarcely apparent at the end of 1924. New mining fields had been discovered, the public held the mining industry in higher esteem, and the indications were that the next few years would show a marked improvement in the status of this industry. In metal mining, distinct progress was made and greater outputs were attained; in the non-metal field, production was only fairly well maintained; coal mining in particular showed a great loss; structural materials in the aggregate showed very little trend in either direction. At the close of 1924 conditions seemed brighter than at the beginning of the year and the expectation was that appreciable advances would shortly be made in the development of Canada's mineral industry.

**Table 3.—Exchange Table Showing the Amount Paid in Canadian Dollars for one United States Dollar by Months, 1921-1924**

Month	1921	1922	1923	1924
	\$	\$	\$	\$
January.....	1.1437	1.0553	1.0067	1.0275
February.....	1.1362	1.0351	1.0119	1.0322
March.....	1.1337	1.0297	1.0208	1.0294
April.....	1.1216	1.0208	1.0203	1.0184
May.....	1.1164	1.0125	1.0222	1.0166
June.....	1.1294	1.0138	1.0231	1.0141
July.....	1.1328	1.0091	1.0263	1.0064
August.....	1.1168	1.0023	1.0244	1.0011
September.....	1.1106	0.9998	1.0233	1.0078
October.....	1.0931	1.0011	1.0156	1.0016
November.....	1.0904	0.9998	1.0181	1.0000
December.....	1.0687	0.9966	1.0239	1.0015
<b>Average for the year.....</b>	<b>1.1161</b>	<b>1.0145</b>	<b>1.0197</b>	<b>1.0131</b>

Table 4.—Metal Prices 1920-1924

Commodity	Market	Unit	1920	1921	1922	1923	1924
			\$	\$	\$	\$	\$
Antimony (ordinaries).....	New York.....	Pound....	0-08490	0-04957	0-05471	0-07897	0-10836
Arsenic, white.....	".....	".....	0-11	0-08850	0-08500	0-12050	0-09636
Cobalt.....	".....	".....	2-50	3-00	3-25	2-85	2-75
Cobalt oxide.....	".....	".....	—	—	2-00	2-10	2-10
Copper.....	".....	".....	0-17456	0-12502	0-13382	0-14421	0-13024
Lead.....	".....	".....	0-07957	0-04545	0-05734	0-07267	0-08097
".....	Montreal*.....	".....	0-08940	0-05742	0-06219	0-07179	0-08104
Nickel.....	New York*.....	".....	0-45	0-35	0-35	0-29353	0-28
Platinum.....	".....	Ounce.....	110-9	75-033	97-618	116-537	118-817
Silver.....	".....	".....	1-009	0-62654	0-67528	0-64873	0-66781
Tin.....	".....	Pound.....	0-48273	0-28576	0-31831	0-41799	0-49674
Zinc.....	St. Louis*.....	".....	0-07671	0-04655	0-05716	0-06607	0-06344

\*Quotations used in this report in computing value of mineral production.

Table 5.—Prices of Non-Metallic Minerals and Structural Materials, 1919-1924, Showing the Average Returns Received by Producers, f.o.b. Shipping Points in Canada as Computed from the Total Receipts and Total Shipments for the Year.

Commodity	Unit	1920	1921	1922	1923	1924
		\$	\$	\$	\$	\$
<b>NON-METALLIC</b>						
Actinolite.....	Ton.....	11-60	12-50	11-50	11-00	13-60
Asbestos.....	".....	74-12	62-89	33-92	32-50	29-73
Barytes.....	".....	30-60	35-43	33-00	20-89	21-90
Chromite.....	".....	22-82	19-90	15-00	.....	.....
Coal.....	".....	4-86	4-81	4-32	4-24	3-93
Corundum.....	".....	125-24	138-87	.....	.....	.....
Feldspar.....	".....	7-42	7-73	8-96	8-13	8-00
Fluorspar.....	".....	21-40	24-69	22-68	12-46	17-66
Graphite.....	".....	75-62	70-29	52-52	60-98	57-05
Grindstones.....	".....	36-06	50-00	43-52	39-76	48-60
Gypsum (crushed).....	".....	3-04	2-56	2-26	1-90	1-82
Magnesite.....	".....	27-90	21-80	26-78	27-99	26-17
Magnesium sulphate.....	".....	20-49	19-47	23-52	54-38	.....
Manganese.....	".....	16-99	50-00	28-00	.....	.....
Mica (rough cobbled).....	Pound.....	0-10	0-10	0-12	0-10	0-06
Mineral water.....	Gal.....	.....	0-07	0-06	0-07	0-07
Natro-alunite.....	Ton.....	.....	50-00	50-00	50-00	.....
Natural gas.....	M. cu. ft.....	0-25	0-33	0-40	0-36	0-38
Oxides, iron.....	".....	8-26	10-34	15-18	12-43	12-54
Peat.....	".....	4-10	4-00	4-83	.....	.....
Petroleum, crude.....	Brl.....	4-19	3-42	3-41	3-06	2-91
Phosphate.....	Ton.....	.....	15-00	9-45	20-00	.....
Pyrites.....	".....	.....	3-48	4-10	3-95	4-06
Quartz.....	".....	.....	4-12	3-12	2-28	2-14
Salt.....	".....	.....	3-65	1-90	2-28	2-14
Sodium sulphate.....	".....	.....	7-36	10-16	8-96	8-46
Talc.....	".....	.....	24-04	30-25	23-76	13-90
Tripolite.....	".....	.....	7-70	14-28	14-28	14-51
.....	".....	.....	33-08	33-00	26-39	25-40
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Cement, portland and puzzolan.....	Brl.....	2-22	2-47	2-22	2-00	1-78
<b>Clay products—</b>						
Brick, common.....	M.....	15-94	16-18	15-99	15-50	.....
Brick, pressed.....	".....	23-54	21-47	20-31	19-91	.....
Brick, hollow building.....	".....	.....	48-88	91-72	80-35	.....
Brick, moulded and ornamental.....	".....	.....	21-03	20-68	20-95	.....
Brick, face.....	".....	.....	.....	.....	.....	17-10
Brick, common..... Soft mud process.....	".....	.....	.....	.....	.....	14-89
Brick, face..... Stiff mud process, wire cut.....	".....	.....	.....	.....	.....	22-86
Brick, common..... cut.....	".....	.....	.....	.....	.....	15-09
Brick, face..... Dry press.....	".....	.....	.....	.....	.....	21-60
Brick, common.....	".....	.....	.....	.....	.....	13-13
Brick, fancy or ornamental.....	".....	.....	.....	.....	.....	130-41
Brick, sewer.....	".....	.....	.....	.....	.....	15-15
Firebrick.....	".....	.....	53-85	37-55	48-19	48-36
Fireclay.....	Ton.....	.....	10-18	5-41	9-00	7-20
Fireproofing and hollow porous blocks.....	".....	.....	12-05	.....	.....	.....
Kaolin.....	".....	.....	22-00	15-23	14-92	14-53
Paving brick.....	M.....	.....	.....	39-81	.....	.....
Sewer-pipe.....	Ton.....	.....	26-31	23-26	23-01	20-87
Tile, drain.....	M.....	.....	38-73	27-65	30-50	27-04
Lime.....	Bush.....	.....	0-41	0-40	0-35	0-33
Sand and gravel.....	Ton.....	.....	0-37	0-22	0-30	0-24
Stone—						
Granite.....	Ton.....	.....	.....	2-94	3-24	2-91
Limestone.....	".....	.....	.....	1-55	1-32	1-21
Marble.....	".....	.....	.....	104-67	121-28	81-49
Sandstone.....	".....	.....	.....	2-75	3-20	2-92

Table 6.—Annual Values of the Mineral Production of Canada, 1886-1924

Year	Value of production	Value per capita	MINERAL PRODUCTION OF CANADA (PER CAPITA)
	\$	\$	
1886.....	10,221,255	2.23	
1887.....	10,321,331	2.23	
1888.....	12,518,894	2.67	
1889.....	14,013,113	2.96	
1890.....	16,763,353	3.50	
1891.....	18,976,616	3.92	
1892.....	16,623,415	3.39	
1893.....	20,035,082	4.04	
1894.....	19,931,158	3.98	
1895.....	20,505,917	4.05	
1896.....	22,474,256	4.38	
1897.....	28,485,023	5.49	
1898.....	38,412,431	7.32	
1899.....	49,234,005	9.27	
1900.....	64,420,877	12.04	
1901.....	65,797,911	12.16	
1902.....	63,231,836	11.36	
1903.....	61,740,513	10.83	
1904.....	60,082,771	10.27	
1905.....	69,078,999	11.49	
1906.....	79,286,697	12.81	
1907.....	86,865,202	13.75	
1908.....	85,557,101	13.16	
1909.....	91,831,441	13.70	
1910.....	106,823,623	14.93	
1911.....	103,220,994	14.32	
1912.....	135,048,296	18.33	
1913.....	145,634,812	19.35	
1914.....	128,863,075	16.75	
1915.....	137,109,171	17.44	
1916.....	177,201,534	22.05	
1917.....	189,646,821	23.18	
1918.....	211,301,897	25.37	
1919.....	176,686,390	20.84	
1920.....	227,859,665	26.40	
1921.....	171,923,342	19.56	
1922.....	184,297,242	20.55	
1923.....	214,079,331	23.41	
1924.....	209,583,406	22.71	

Table 7.—Annual Values of Metallic and Non-Metallic Mineral Production of Canada 1907-1924

Year	Metallic	Non-Metallic		Total
		Fuels and other non- metallics	Structural materials and clay products	
	\$	\$	\$	\$
1907.....	42,426,607	31,275,546	12,863,049	*86,865,202
1908.....	41,774,362	32,142,784	11,339,955	*85,557,101
1909.....	44,156,841	31,141,251	16,533,349	91,831,441
1910.....	49,438,873	37,757,158	19,627,592	106,823,623
1911.....	46,105,423	34,405,960	22,709,611	103,220,994
1912.....	61,172,753	45,080,674	28,794,869	135,048,296
1913.....	66,361,351	48,463,709	30,809,752	145,634,812
1914.....	59,386,619	43,467,229	26,009,227	128,863,075
1915.....	75,814,841	43,373,571	17,920,759	137,109,171
1916.....	106,319,365	53,414,983	17,467,186	177,201,534
1917.....	106,455,147	63,354,363	19,837,311	189,646,821
1918.....	114,549,152	77,621,946	19,130,799	211,301,897
1919.....	73,262,793	76,002,087	27,421,510	176,686,390
1920.....	77,939,630	108,027,947	41,892,088	227,859,665
1921.....	49,343,232	87,842,682	34,737,428	171,923,342
1922.....	61,785,707	82,976,794	39,534,741	184,297,242
1923.....	84,391,218	91,936,732	37,751,381	214,079,331
1924.....	102,406,528	71,796,009	35,380,869	209,583,406

\* Total includes \$300,000 allowed for products not reported.

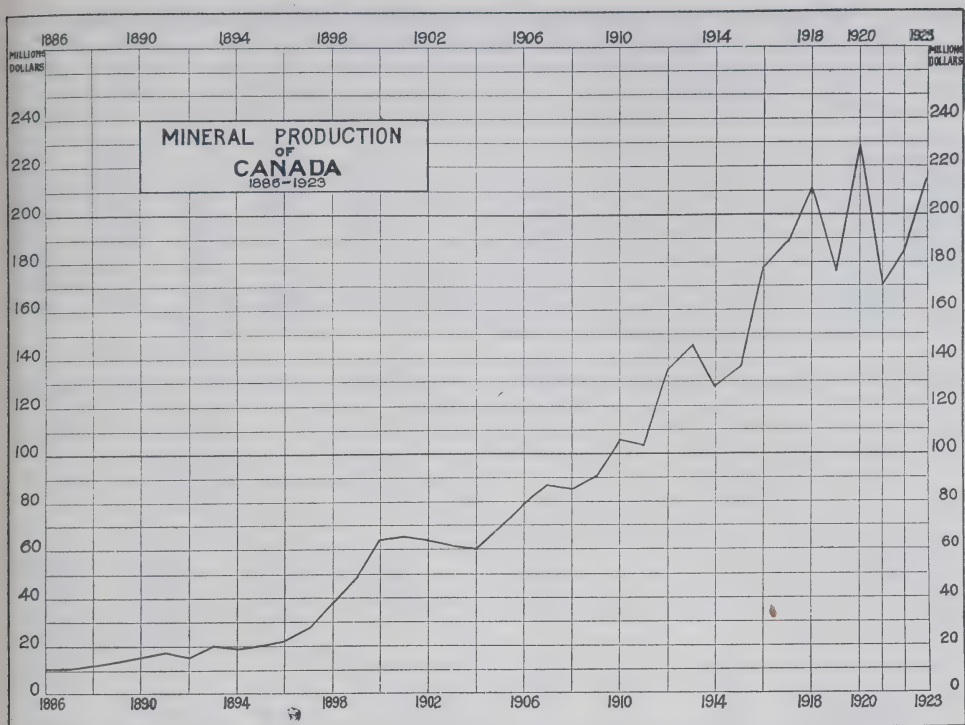


Table 8.—Values of the Mineral Production of Canada by Provinces, 1899-1924

Year	Nova Scotia*	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon
	\$	\$	\$	\$		\$		\$	
1899.....	6,817,274	420,227	2,585,635	9,819,557		17,108,707		12,482,605	Included
1900.....	9,298,479	439,060	3,292,383	11,258,099		23,452,330		16,680,526	with
1901.....	7,770,159	467,985	3,759,984	13,970,010		19,297,940		20,531,833	Mani-
1902.....	10,686,549	607,129	3,743,636	14,619,091		16,127,400		17,448,031	toba,
1903.....	11,431,914	580,495	3,585,938	14,160,033		14,082,986		17,899,147	Saskat-
1904.....	11,212,746	559,913	3,688,482	12,582,843		12,713,613		19,325,174	chewan
1905.....	11,507,047	559,035	4,405,975	18,833,292		11,387,642		22,386,008	and
1906.....	12,894,303	646,328	5,242,058	25,111,682		10,092,726		25,299,600	Alberta
1907.....	14,532,040	664,467	6,205,553	30,381,638	898,775	533,251	4,657,524	25,656,056	3,335,898
1908.....	14,487,108	579,816	6,372,949	30,623,812	584,374	413,212	5,122,505	23,704,035	3,669,290
1909.....	12,504,810	657,035	7,086,265	37,374,577	1,193,377	456,246	6,047,447	22,479,006	4,032,678
1910.....	14,195,730	581,942	8,270,136	43,538,078	1,500,359	498,122	8,996,210	24,478,572	4,764,474
1911.....	15,409,397	612,830	9,304,717	42,796,162	1,791,772	636,706	6,662,673	21,299,305	4,707,432
1912.....	18,922,236	771,004	11,656,998	51,985,876	2,463,074	1,165,642	12,073,589	30,076,635	5,933,242
1913.....	19,376,183	1,102,613	13,475,534	59,167,749	2,214,496	881,142	15,054,046	28,086,312	6,276,737
1914.....	17,584,639	1,014,570	11,836,929	53,034,677	2,413,489	712,313	12,684,234	24,164,039	5,418,185
1915.....	18,088,342	903,467	11,619,275	61,071,287	1,318,387	451,933	9,909,347	28,689,425	5,057,708
1916.....	20,042,262	1,118,187	14,406,598	80,461,323	1,823,576	590,473	13,297,543	39,969,962	5,491,610
1917.....	21,104,542	1,435,024	17,400,077	89,066,600	2,628,264	860,651	16,527,535	36,141,926	4,482,202
1918.....	22,317,108	2,144,017	19,605,347	94,694,093	3,120,600	1,019,781	23,109,987	42,935,333	2,355,631
1919.....	23,445,215	1,770,945	21,267,947	67,917,998	2,868,378	1,521,964	21,087,582	34,865,427	1,940,934
1920.....	34,130,017	2,491,787	28,886,214	81,715,808	4,223,461	1,837,468	33,586,456	39,411,728	1,576,726
1921.....	28,912,111	1,901,505	15,157,094	57,356,651	1,934,117	1,114,220	30,562,229	33,230,460	1,754,955
1922.....	25,923,499	2,263,692	17,647,939	65,866,029	2,258,942	1,255,470	27,872,136	39,423,962	1,785,573
1923.....	29,648,893	2,462,457	20,308,763	80,825,851	1,768,037	1,047,583	31,287,536	43,757,388	2,972,823
1924.....	23,820,352	1,969,260	19,136,504	86,398,656	1,534,249	1,128,100	22,344,940	52,298,533	952,812

\* Includes a small production from Prince Edward Island.

Table 9.—Percentage of the Total Value of the Mineral Production of Canada Produced by Each Province, 1920-1924

Province	1920	1921	1922	1923	1924
Nova Scotia*	14.98	16.82	14.12	13.85	11.38
New Brunswick	1.09	1.10	1.23	1.15	0.94
Quebec	12.68	8.82	9.57	9.49	9.12
Ontario	35.86	33.36	35.74	37.76	41.29
Manitoba	1.85	1.12	1.23	0.83	0.73
Saskatchewan	0.81	0.65	0.67	0.49	0.54
Alberta	14.74	17.78	15.13	14.60	10.61
British Columbia	17.30	19.33	21.39	20.44	24.94
Yukon	0.69	1.02	0.92	1.39	0.45
Canada	100.00	100.00	100.00	100.00	100.00

\* Includes a small percentage from Prince Edward Island.

Table 10.—Values by Classes of Products of the Mineral Production of Canada, by Provinces, 1924

Province	Metallic	Non-Metallic	Structural materials and clay products	Total
Nova Scotia*	\$ 36,916	\$ 23,250,539	\$ 532,897	\$ 23,820,352
New Brunswick	4,088	1,643,178	321,994	1,969,260
Quebec	604,279	7,259,686	11,272,539	19,136,504
Ontario	61,980,175	6,989,032	17,429,449	86,393,656
Manitoba	24,486	348,272	1,161,491	1,534,249
Saskatchewan		893,775	234,325	1,128,100
Alberta		20,687,198	1,657,742	22,344,940
British Columbia	38,812,037	10,716,064	2,770,432	52,298,533
Yukon Territory	944,547	8,265		952,812
Canada	102,406,528	71,796,009	35,380,869	209,583,406

\* Includes a small production from Prince Edward Island.

MINERAL PRODUCTION OF CANADA  
1907-1922

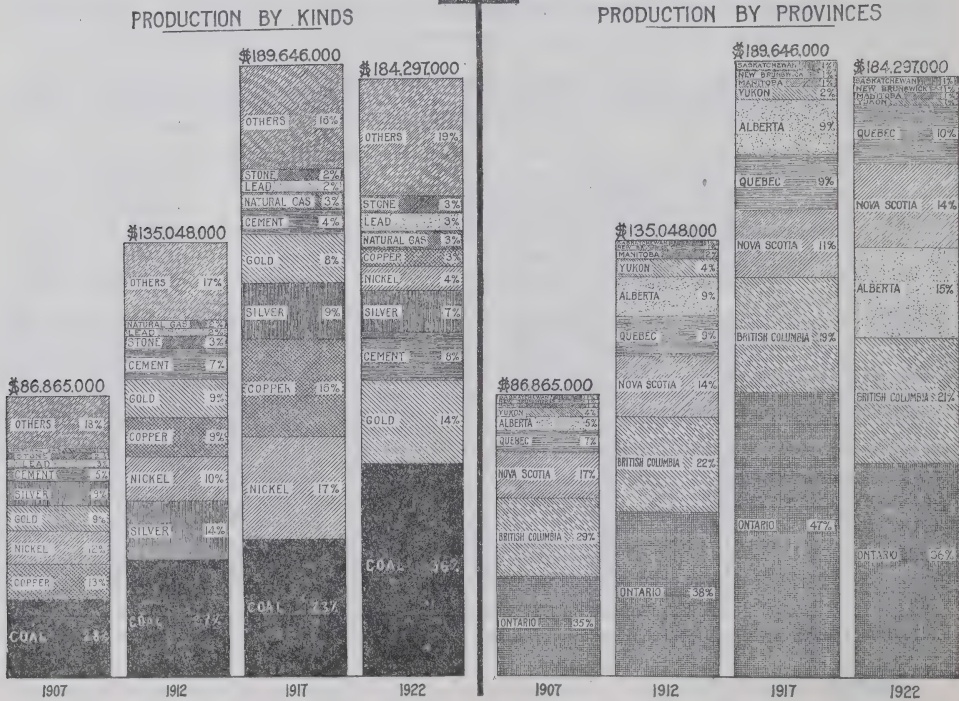


Table 10A—Mineral Production in Canada by Provinces, 1924

—	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon
<b>METALLIC</b>									
Arsenic..... Lb.	381,092			3,745,225				495,250	
\$	15,244			313,281				19,768	
Bismuth..... Lb.				12,863					
\$				27,913					
Cobalt..... Lb.				948,704					
\$				1,682,395					
Copper..... Lb.			1,893,008	37,113,193				65,451,246	
\$			246,546	4,833,622				8,524,370	
Gold..... Fine oz.	1,047		883	1,241,728	1,180			245,719	34,825
\$	21,643		18,253	25,668,795	24,393			5,079,462	719,897
Iron, pig, from Canadian ore..... Tons				3,696				14	
\$				92,400				350	
Iron ore sold for export..... Tons			1,408						
\$			3,771						
Lead..... Lb.			1,058,983	5,055,368				168,467,628	903,520
\$			85,820	409,687				13,652,617	73,221
Manganese..... Tons		584							
\$		4,088							
Molybdenite..... Lb.			18,739						
\$			9,370						
Nickel..... Lb.				69,536,350					
\$				19,470,178					
Palladium..... Fine oz.				8,923					
\$				811,993					
Platinum..... Fine oz.				9,181				5	
\$				1,090,858				569	
Rhodium, Osmium, Iridium, Ruthenium— Fine oz.				593					
\$				51,120					
Silver..... Fine oz.	44		83,814	11,272,567	140			8,153,003	226,755
\$	29		55,972	7,527,933	93			5,444,657	151,429
Zinc..... Lb.			2,909,008					98,000,069	
\$			184,547					6,090,244	
Total..... \$	36,916	4,088	604,279	61,980,175	24,486			38,812,037	944,547
<b>NON-METALLIC</b>									
Actinolite..... Tons				90					
\$				1,225					
Asbestos..... Tons			225,572	172					
\$			6,618,930	91,900					
Barytes..... Tons	151								
\$	3,308								
Bituminous sands..... Tons							531		
\$							2,127		
Coal..... Tons	5,557,441	217,121				479,118	5,189,729	2,193,667	1,121
\$	22,280,554	932,185				886,668	18,884,318	10,601,998	8,265
Feldspar..... Tons			16,147	28,657					
\$			142,118	216,422					
Fluorspar..... Tons				76					
\$				1,343					
Garnets..... Tons				360					
\$				7,200					
Graphite..... Tons			46	1,288					
\$			3,275	72,842					
Grindstones..... Tons	338	2,113						240	
\$	12,525	99,299						19,000	
Gypsum..... Tons	441,752	86,738		88,121	29,375			30	
\$	915,845	476,804		467,097	348,212			150	
Magnesite..... Tons			3,873						
\$			101,356						

Table 10A—Mineral Production in Canada by Provinces, 1924—Concluded

	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Saskat- chewan	Alberta	British Colum- bia	Yukon
<b>NON-METALLIC—Con.</b>									
Sodium sulphate...Tons						1,083			
\$						6,004			
Talc and soapstone...Tons			440	10,718				165	
\$			20,273	130,577				3,630	
Tripolite.....Tons	33								
\$	838								
Volcanic ash.....Tons						245			
\$						1,103			
Total.....\$	23,250,539	1,643,178	7,259,686	6,989,032	348,272	893,775	20,687,198	10,716,064	8,265
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>									
Cement, Portland...Brls			2,758,316	3,564,499	286,948		416,534	472,327	
\$			4,796,959	5,668,671	746,750		945,700	1,240,331	
Clay products—									
Brick—									
Soft mud process—									
Face.....M.				10,605		226			
\$				182,385		2,863			
Common (a)....M.	555	2,345	4,802	31,041	5,722	1,603	1,446	2,565	
\$	7,470	38,131	48,865	488,742	93,698	20,473	19,195	29,470	
Stiff mud process (wire cut)—									
Face.....M.	675		14,611	63,353	165	1,200	213	348	
\$	13,581		381,549	1,385,131	4,911	32,210	5,736	19,106	
Common.....M.	4,161		93,343	22,563	127	227	3,502	633	
\$	50,322		1,351,657	424,536	1,270	3,570	38,823	10,453	
Dry press—									
Face.....M.			1,817	30,597		173	1,486	1,130	
\$			53,006	636,101		6,064	25,824	40,577	
Common.....M.			2,433	2,656		128	7,510	2,723	
\$				34,093		2,018	96,533	35,399	
Fancy or orna- mental brick...M.			223	532					
\$			9,603	88,857					
Sewer brick.....M.				2,656					34
\$				39,446					1,329
Fire brick from domestic clay...M.	176			718		436		2,974	
\$	8,269	640		38,509		19,936		141,902	
Fireclay.....Tons	1,967	50				315		1,313	
\$	5,258	2,005				2,436		16,559	
Fireclay blocks and shapes.....\$	\$30					3,818	12,977	33,548	
Structural tile—Hol- low blocks (includ- ing fire-proofing and load-bearing tile)—									
Tons	4,695		29,366	48,134	909	1,795	5,511	6,348	
\$	54,410		277,940	428,894	11,726	35,892	51,518	66,397	
Roofing tile....No.				7,377					
\$				917					
Floor tile (quarries) Sq. ft.				441,301				3,300	
Drain tile (b)....M.	146		65	35,211				397	
\$	4,265		2,650	14,096	167	200	39	424	
Sewer pipe (including copings, flue lining, etc.).....Tons	12,910		12,939	42,449			6,345	1,712	
\$	214,783		310,525	848,398			168,016	52,558	
Pottery, glazed or unglazed.....\$		34,218		84,100			120,024	150,522	
Lime.....Bush.	2,229	208,180	2,386,445	5,419,307	394,226		90,214	636,348	
\$	936	108,890	699,937	1,840,152	121,518		36,279	370,829	
Sand and gravel(c).Tons	306,873	141,897	2,197,145	6,174,284	359,535	702,713	615,594	1,105,459	
\$	60,849	23,999	414,428	2,041,959	81,897	97,045	115,969	344,937	
Stone—									
Granite.....Tons	7,554	4,921	42,283	214,691					
\$	33,021	80,812	442,933	208,219				248,360	
Limestone.....Tons	57,069	14,308	1,465,237	2,614,911	54,065		16,418	27,053	
\$	56,323	33,299	2,058,432	2,551,111	93,876		16,762	21,881	
Marble.....Tons			4,379						
\$			322,455						
Sandstone.....Tons	2,912		80,190	10,571			280	650	
\$	22,480		101,700	30,038			2,555	83,500	
Total.....\$	532,897	321,994	11,272,539	17,429,449	1,161,491	234,325	1,657,742	2,770,432	
Grand total.....	23,820,352	1,969,260	19,136,504	86,398,656	1,534,249	1,128,100	22,344,940	52,298,533	952,812

(a) Includes 115 M valued at \$1,590 for P.E.I.

(b) Includes 75 M valued at \$1,750 for P.E.I.

(c) Includes 11490 tons valued at \$1,248 for P.E.I.

Table 11.—Mineral Production of Nova Scotia, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Arsenic.....Lb.			45,000	2,250	381,092	15,244
Gold.....Fine oz. (a)	1,128	21,598	680	13,556	(a) 1,091	21,672
Manganese ore.....Tons	73	2,044	200	1,400		
<b>NON-METALLIC—</b>						
Barytes.....Tons	289	9,537	209	4,368	151	3,308
Coal....."	5,569,072	24,629,921	6,597,838	28,170,458	5,557,441	22,280,554
Feldspar....."						
Grindstones....."	102	3,692	256	7,906	338	12,525
Gypsum....."	332,404	580,148	341,705	747,934	441,752	915,845
Salt....."	5,053	54,666	4,480	39,151	4,551	37,469
Tripolite....."	219	5,781	130	3,250	33	838
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Clay products.....		431,618		413,974		(b) 359,288
Lime.....Bush			42,370	7,199	2,229	936
Stone.....Tons	87,955	119,492	138,682	177,090	67,535	111,824
Sand and gravel....."	222,441	65,002	224,016	60,357	306,873	(c) 60,849
<b>Total</b> .....		<b>25,923,499</b>		<b>29,648,893</b>		<b>23,820,352</b>

(a) Includes 86 ounces silver, value \$58 in 1922, 25 oz. silver value \$16 in 1923, and 44 oz. silver, value \$29 in 1924.

(b) Includes small production from P.E.I.

(c) Includes railway ballast from P.E.I.; \$10,028 in 1922, and \$4,429 in 1923 and \$1,248 in 1924.

Table 12.—Mineral Production of New Brunswick, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Manganese ore.....Tons					584	4,088
<b>NON-METALLIC—</b>						
Coal....."	287,513	1,107,643	276,617	1,196,772	217,121	932,185
Grindstones....."	903	40,050	1,758	72,177	2,113	99,299
Gypsum....."	82,462	517,668	104,740	564,680	86,738	476,804
Natural gas.....M cu. ft.	753,898	148,040	640,300	128,068	599,972	113,577
Petroleum.....Brl.	7,778	32,732	8,826	35,642	5,561	21,313
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Clay products.....		75,425		62,587		74,994
Lime.....Bush	560,834	187,895	329,548	143,814	208,180	108,890
Stone.....Tons	12,027	104,730	22,448	166,083	19,229	114,111
Sand and gravel....."	448,322	49,509	608,528	94,634	141,897	23,999
<b>Total</b> .....		<b>2,263,692</b>		<b>2,462,457</b>		<b>1,969,260</b>

Table 13.—Mineral Production\* of Quebec, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Chromite.....Tons	⊕		3,558	52,650		
Copper.....Lb.					1,893,008	246,546
Gold.....Fine oz.			667	13,788	883	18,253
Iron ore, sold for export.....Tons	526	1,410	69	186	1,408	3,771
Lead.....Lb.			520,041	37,334	1,058,983	85,820
Molybdenite....."					18,739	9,370
Silver.....Fine oz.			33,006	21,412	83,814	55,972
Zinc.....Lb.			366,240	24,197	2,909,008	184,547
<b>NON-METALLIC—</b>						
Asbestos.....Tons	163,706	5,552,723	231,476	7,519,906	225,572	6,618,930
Chromite....."	767	11,503	⊕		⊕	
Feldspar....."	12,472	127,826	12,026	102,779	16,147	142,118
Graphite... .."	24	1,500	45	2,316	46	3,275
Magnesite....."	2,849	76,294	4,801	134,382	3,873	101,356
Mica....."	1,360	97,748	1,545	216,684	1,677	185,020
Mineral water.....Imp. Gal.	12,161	3,692	5,421	2,408	7,683	2,288
Iron oxides.....Tons	7,282	110,488	9,911	123,186	7,146	88,540
Phosphate....."	131	1,320	30	600		
Pyrites....."					4,032	10,619
Quartz....."	10,994	53,023	13,376	68,936	17,893	87,267
Talc....."	150	4,950	590	19,993	449	20,273
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement.....Brl.	2,660,935	5,907,300	3,173,993	6,347,986	2,758,316	4,796,959
Clay products.....		2,476,370		2,437,220		2,435,695
Kaolin.....Tons	1,197	17,866	163	2,369		
<b>Lime—</b>						
Quicklime.....Bush.	2,108,513	634,157	2,198,071	576,731	2,219,359	640,990
Hydrated lime.....Tons	5,278	55,642	5,595	57,482	5,848	58,947
Slate....."	1,899	14,871	1,836	17,289		
Stone....."	987,355	2,342,316	1,094,816	2,322,745	1,592,089	2,925,520
Sand and gravel....."	905,101	156,940	1,055,817	206,175	2,197,145	414,428
<b>Total.....</b>		<b>17,647,939</b>		<b>20,308,763</b>		<b>19,136,504</b>

\*There is also in this province an important production of aluminium from imported ores.

⊕Included in metallics 1923 and 1924.

Table 14.—Mineral Production of Ontario, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Arsenic, white..... Lb.			5,158,617	582,785	3,745,225	313,281
Bismuth..... "					12,863	27,913
Cobalt..... "	569,960	1,852,370	888,061	2,530,974	948,704	1,682,395
Copper..... "	10,943,636	1,464,477	31,656,800	4,565,227	37,113,193	4,833,622
Gold..... Fine oz.	1,000,340	20,678,862	971,704	20,086,904	1,241,728	25,668,795
Iron ore, sold for export..... Tons			5,358	18,878		
Iron, pig, from Canadian ore (a).... "	8,095	178,980	20,739	432,298	3,696	92,400
Lead..... Lb.	2,890,397	180,216	4,401,494	315,983	5,055,368	409,687
Nickel..... "	17,597,123	6,158,993	62,453,843	18,332,077	69,536,350	19,470,178
Platinum..... Fine oz.	458	44,709	1,210	141,010	9,181	1,090,858
Palladium..... "	724	47,060	1,732	138,560	8,923	811,993
Rhodium, ruthenium, osmium, iridium "	391	31,280	(b) 304	45,000	593	51,120
Silver..... Fine oz.	10,811,903	7,300,305	10,540,943	6,838,226	11,272,567	7,527,933
<b>NON-METALLIC—</b>						
Actinolite..... Tons	50	575	53	583	90	1,225
Arsenious oxide..... "	2,058	299,940				
Asbestos..... "			6	2,600	172	91,900
Barytes..... "			200	4,180		
Feldspar..... "	15,255	120,576	17,199	134,822	28,657	216,422
Fluorspar..... "	284	3,905	64	597	76	1,343
Garnet..... "			1,250	100,000	360	7,200
Graphite..... "	573	29,853	1,068	65,557	1,288	72,842
Gypsum..... "	110,227	621,668	99,958	542,317	88,121	467,097
Mica..... "	1,989	54,515	1,980	110,290	2,414	172,252
Mineral water..... Imp. gal.	209,072	10,528	227,030	14,047	201,670	13,133
Natural gas..... M. cu. ft.	8,060,114	4,076,296	8,128,413	4,066,244	7,150,078	3,798,381
Peat..... Tons	3,000	14,500				
Petroleum..... Brl.	164,732	526,316	159,400	478,149	154,368	441,952
Phosphate..... Tons	59	476				
Pyrites... .. "	11,233	39,763	25,134	99,716	11,429	44,542
Quartz..... "	81,528	118,054	225,110	483,285	111,645	192,855
Salt..... "	176,741	1,573,657	197,917	1,674,365	203,428	1,337,311
Talc..... "	12,854	178,728	9,531	125,124	10,718	130,577
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl.	3,104,386	6,393,566	3,296,428	5,855,589	3,564,499	5,668,671
Clay products.....		6,944,218		6,270,615		5,089,299
Lime—						
Quicklime..... Bush.	3,939,954	1,311,563	4,810,421	1,373,823	4,391,050	1,401,545
Hydrated .....	36,408	455,980	41,727	519,840	35,989	438,607
Stone..... Tons	2,317,265	2,969,926	2,638,984	2,869,228	2,840,173	2,789,368
Sand and gravel..... "	6,285,123	2,184,174	8,146,433	2,006,958	6,174,284	2,041,959
<b>Total.....</b>		<b>65,866,029</b>		<b>80,825,851</b>		<b>86,398,656</b>

(a) The total production of blast-furnace pig-iron in Ontario in 1922 was 293,662 tons valued at \$6,493,513, in 1923 it was 674,428 tons valued at \$15,995,496, and in 1924 it was 465,888 valued at \$10,482,480.

(b) Rhodium and iridium

**Table 15.—Sales and Shipments from the Mineral Industries of Ontario, 1923 and 1924**  
(Quantities shown are final shipments during the year; values given are those reported as received, f.o.b. shipping point, by the shippers.)

Metal mining industries	1923		1924	
	Quantity	Marketed value as reported	Quantity	Marketed value as reported
<b>SILVER-COBALT INDUSTRY—</b>		\$		
Sold by South Ontario smelters—				
Silver bullion..... Oz.	3,093,060	2,004,180	4,309,595	2,936,927
Arsenic (As <sub>2</sub> O <sub>3</sub> )..... Lb.	5,158,617	582,785	3,596,165	309,108
Cobalt metal, oxide, salts, etc., (metal content)..... "	666,213	1,708,337	626,400	1,421,826
Nickel metal, oxide, salts, etc. (metal content)..... "	83,632	19,321	42,482	9,418
Sulphate..... "			10,672	533
Matte.....		76,642		
Speiss residues exported..... Tons	248	99,023	637	235,317
Silver lead bismuth bullion..... Lb.			60,044	87,264
Sold direct from Ontario silver mines—				
Silver bullion..... Oz.	6,018,259	3,928,311	5,004,992	3,369,664
Nuggets to provincial government..... "			15,406	10,398
Ores, concentrates and residues exported..... Tons	1,481	443,819	2,412	556,779
Total for silver-Cobalt industry.....		8,862,418		8,937,234
<b>NICKEL-COPPER INDUSTRY—</b>				
Matte exported..... Tons	21,450	5,645,305	26,565	4,667,136
Refined nickel.....				
Nickel oxides.....		7,935,962		9,760,022
Converter copper.....				
Precious metals..... Oz.	58,297	340,935	62,713	364,246
Total for nickel-copper industry.....		13,922,202		14,791,404
<b>GOLD MINING INDUSTRY—</b>				
Crude bullion..... Oz.	1,214,964	20,143,938	1,579,994	25,692,578
Exchange premium.....		280,119		196,748
Slags exported..... Tons	52	22,403	39	31,011
Temiskaming testing laboratory..... "			39	2,279
Total for gold-mining industry.....		20,446,460		25,922,616
<b>LEAD MINING AND SMELTING INDUSTRY—</b>				
Lead bullion..... Lb.	5,154,312	340,724	5,415,574	412,110
<b>IRON MINING AND SMELTING INDUSTRY—</b>				
Pig iron from Ontario ores..... Tons	20,739	432,298	3,696	92,400
<b>Totals—</b>				
(a) Metal mining and smelting industries listed above.....		44,004,102		50,155,764
(b) Non-Metallic mineral industries, as per Table 14.....		7,901,876		6,989,032
(c) Structural materials and clay products industries, as per Table 14.....		18,896,053		17,429,449
<b>Grand Total of Sales.....</b>		<b>70,802,031</b>		<b>74,574,245</b>

Table 16.—Mineral Production of Manitoba, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Gold..... Fine oz.	156	3,225	31	641	1,180	24,393
Silver..... "	20	14	5	3	140	93
<b>NON-METALLIC—</b>						
Gypsum..... Tons	34,072	440,914	31,575	386,554	29,375	348,212
Natural gas..... M cu. ft.	200	60	200	60	200	60
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl.	429,352	1,126,137	320,218	817,664	286,948	746,750
Clay products.....		210,740		160,134		117,450
Lime..... Bush.	525,184	163,799	524,128	161,226	394,229	121,518
Sand and gravel..... Tons	780,231	207,415	595,549	123,478	359,535	81,897
Stone..... Tons	34,359	106,638	51,304	118,277	54,065	93,876
<b>Total.....</b>		<b>2,258,942</b>		<b>1,768,037</b>		<b>1,534,249</b>

Table 17.—Mineral Production of Saskatchewan, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>NON-METALLIC—</b>						
Coal..... Tons	382,437	802,053	438,100	858,448	479,118	886,668
Sodium sulphate..... "	504	11,980	733	10,189	1,083	6,004
Volcanic ash.....					245	1,103
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Clay products.....		134,704		119,405		137,280
Sand and gravel..... Tons	924,944	306,733	438,319	59,541	702,713	97,045
<b>Total.....</b>		<b>1,255,470</b>		<b>1,047,583</b>		<b>1,128,100</b>

Table 18.—Mineral Production of Alberta, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>NON-METALLIC—</b>						
Bituminous sand..... Tons					531	2,127
Coal..... Tons	5,990,911	24,351,913	6,854,397	28,018,303	5,189,729	18,884,318
Natural gas..... M cu. ft.	5,867,459	1,622,105	7,191,670	1,692,246	7,131,086	1,796,618
Petroleum..... Brl.	5,608	52,128	1,943	8,227	844	4,135
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl.	358,209	838,208	318,756	740,940	416,534	945,700
Clay products.....		700,063		590,565		540,477
Lime..... Bush.	130,627	71,328	87,753	37,999	90,214	36,279
Sand and gravel..... Tons	1,139,961	229,091	888,216	199,256	615,594	115,969
Stone..... Tons	554	7,300			16,698	19,317
<b>Total.....</b>		<b>27,872,136</b>		<b>31,287,536</b>		<b>22,344,940</b>

Table 19.—Mineral Production of British Columbia, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Arsenic..... Lb.			1,217,970	41,780	495,250	19,768
Copper (a)..... " 31,936,182	4,273,700	55,224,737	7,963,959	65,451,246	8,524,370	
Gold..... Fine oz. 207,370	4,286,718	200,140	4,137,261	245,719	5,079,462	
Iron ore sold for export..... Tons 1,255	3,528	243	1,215			
Iron, pig from Canadian ores..... Lb. 87,093,266	5,430,265	99,541,815	7,146,107	168,467,628	13,652,617	
Lead..... " 12	1,154	7	816	5	569	
Platinum..... Fine oz. 7,150,937	4,828,384	6,113,327	3,965,889	8,153,003	5,444,657	
Silver..... " 56,290,000	3,217,536	60,050,000	3,967,504	96,000,069	6,090,244	
<b>NON-METALLIC—</b>						
Arsenic..... Tons 518	21,097	(b)	(b)			
Coal..... " 2,927,033	14,622,317	2,823,306	13,813,520	2,193,667	10,601,998	
Fluorspar..... " 4,219	98,233	75	1,135			
Grindstones..... " 100	500	323	1,615	240	19,000	
Gypsum..... " 1,021	24,017	121	6,580	30	150	
Magnesium sulphate..... " 50	2,500	15	750			
Natro-alumite..... " 3	120	513	6,450	120	2,620	
Oxides (iron)..... " 6,908	34,540	3,457	13,304	8,091	40,459	
Pyrites..... " 17,425	37,521	25,590	47,029	21,558	43,034	
Quartz..... " 202	3,027	265	3,975	510	5,173	
Sodium carbonate..... " 191	4,780	245	5,390	165	3,630	
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl. 391,090	1,173,270	795,637	1,302,482	472,327	1,240,331	
Clay products..... " 447,452			426,138		460,594	
Lime—						
Quicklime..... Bush. 433,716	254,320	564,971	338,443	517,577	320,312	
Hydrated..... Tons 2,909	30,321	4,410	50,051	4,157	50,517	
Sand and gravel..... " 960,251	304,071	434,194	266,119	1,105,459	344,937	
Stone..... " 197,670	324,591	165,100	249,866	178,225	353,741	
<b>Total.....</b>		<b>39,423,962</b>		<b>43,757,388</b>		<b>52,298,533</b>

(a) Smelter recoveries of copper.

(b) Included in metallics in 1923 and 1924.

Table 20.—Mineral Production of Yukon, 1922, 1923 and 1924

Product	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Gold..... Fine oz. 54,456	1,125,705	60,144	1,243,287	34,825	719,897	
Silver..... " 663,493	447,997	1,914,438	1,241,953	226,755	151,429	
Lead..... Lb. 3,323,508	207,221	6,771,113	486,098	903,520	73,221	
<b>NON-METALLIC—</b>						
Coal..... Tons 465	4,650	313	1,485	1,121	8,265	
<b>Total.....</b>		<b>1,785,573</b>		<b>2,972,823</b>		<b>952,812</b>

## METALLICS

## ALUMINIUM

Up to the present time no commercial ores of aluminium have been discovered in Canada. This extremely useful metal has been produced in Canada since 1903 from ore imported mainly from the United States and in less amounts from France, by the Northern Aluminium Company, which is the Canadian branch of the Aluminium Company of America at Shawinigan Falls, Que. The ore from which aluminium is produced, known as bauxite, is a variety of laterite, a rock containing varying proportions of hydrated oxides of iron and aluminium. In Europe, bauxite is found in commercial quantities in the south of France, particularly in the Dalmatia-Croatia-Istria region, and in the Bihar mountains in Roumania. Other important deposits are those of the United States, British and Dutch Guiana, India and the Gold Coast of Africa.

As there is only one Canadian producer of aluminium, production figures are not shown separately. There are several companies making aluminium ware of all kinds and a separate report is published annually by the Dominion Bureau of Statistics on this section of the trade.

Aluminium is a product of the electric furnace. Alumina, which has previously been recovered by chemical means from bauxite, is dissolved in molten cryolite, in the electric furnace and a low voltage current is passed through the melt to decompose the oxide into metallic aluminium and oxygen; the metal sinks to the bottom of the crucible. The free oxygen attacks the carbon of the furnace electrode forming carbon dioxide gas, for this reason the electrode consumption is high. Theoretically, there should be no loss of cryolite but in actual operations losses occur, which must be made good from time to time. The mineral cryolite used in the manufacture of aluminium occurs in Greenland; annual shipments amount to approximately 10,000 tons. The chief uses of aluminium are in the manufacture of alloys with other metals including copper, nickel, cobalt, iron, antimony, tin, zinc and magnesium, and there are many uses for the pure metal itself. Pure aluminium powder is used in the thermit process to reduce the oxides of certain metals to the metallic state. In the manufacture of some alloys, metals of low carbon content are required and in the preparation of these metals from their oxides, reduction by aluminium is found very desirable, and a great improvement over the older method of reduction by carbon. Powdered aluminium is also used in precipitation of gold and silver from cyanide solutions and because of its great affinity for oxygen, it is sometimes employed as a degasifier or a deoxidizer in the manufacture of steel.

**Table 21.—Imports of Alumina and Aluminium into Canada and Exports of Aluminium during 1922, 1923 and 1924**

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
<b>IMPORTS—</b>		\$		\$		\$
Alumina.....	42,617,700	938,181	131,773,700	2,190,091	128,695,000	2,375,346
Aluminium—						
Ingots, blooms, bars.....	1,199,718	251,435	756,981	194,357	653,656	183,110
Tubing.....	34,157	16,594	73,103	30,770	47,247	27,064
Manufactures.....		315,317		468,518		485,037
Leaf foil.....		215,944		151,023		135,316
Household and hollow-ware.....		544,784		544,046		403,613
<b>Total.....</b>		<b>2,282,255</b>		<b>3,578,805</b>		<b>3,609,486</b>
<b>EXPORTS—</b>						
Aluminium—						
Ingots, bars, etc.....	9,614,200	1,637,147	17,585,400	3,380,198	18,146,700	3,990,857
Manufactures.....		451,587		797,635		767,430
<b>Total.....</b>		<b>2,088,734</b>		<b>4,177,833</b>		<b>4,758,287</b>

Table 22.—Monthly Average Prices of Ingot Aluminium 1922, 1923 and 1924

(At New York in cents per pound)

Month	1922	1923	1924
January.....	17.74	23.00	28.00
February.....	17.33	23.37	28.00
March.....	17.52	25.12	28.00
April.....	18.07	27.00	28.50
May.....	17.92	27.00	28.50
June.....	17.87	27.00	28.50
July.....	17.87	26.50	28.50
August.....	17.87	26.50	28.00
September.....	18.26	26.30	28.00
October.....	20.32	26.50	28.00
November.....	20.87	26.50	28.00
December.....	22.52	27.00	28.00
Average.....	18.65	25.98	28.17

Table 23.—World's Production of Aluminium, 1913, 1920-1924

(From "The Mineral Industry, 1924")

(Short tons)

Country	1913	1920	1921	1922	1923	1924
Austria.....	5,510	2,204	2,204	4,408	4,408	3,306
Canada.....	6,519	11,020	6,612	9,918	18,183	17,632
France.....	14,880	13,224	11,020	13,224	13,224	20,387
Germany.....	882	11,020	11,020	13,224	14,326	14,326
Great Britain.....	11,020	8,816	5,510	10,469	9,918	7,714
Italy.....	963	1,364	820	694	1,653	2,204
Norway.....	2,755	5,510	4,408	6,612	15,428	24,244
Switzerland.....	11,020	13,224	11,020	13,224	13,224	20,938
United States.....	32,509	99,180	31,683	57,304	106,894	93,670
Total.....	86,058	165,562	84,297	129,077	197,258	204,421

Table 24.—World's Production of Bauxite, 1913, 1920-1924

(1913 from "The Mineral Industry, 1918"; 1920-1924 from "The Mineral Industry, 1924")

(Metric tons)

Country	1913	1920	1921	1922	1923	1924
Austria.....		362	2,638	4,095	2,734	3,000
British Guiana.....		31,883	20,011		112,168 (a)	160,000
British India.....	1,203	6,401	6,759	4,998	6,547 (a)	6,000
Dutch Guiana.....				18,805	12,613 (a)	60,000
France.....	309,285	266,716	95,318	139,176	314,330	335,582
Germany.....		13,420 (a)	2,000	20,000	16,054 (a)	10,000
Roumania.....				3,736	4,161 (a)	3,000
Italy.....	6,953	13,139	49,120	66,646	98,055	145,520
Jugo-Slavia.....		27,860	10,021	32,624 (a)	50,000 (a)	30,000
Spain.....		540	184	192	372	300
United Kingdom.....	8,417	11,197	2,305	5,953	3,504 (a)	5,000
United States.....	213,675	529,675	141,790	314,584	553,434	352,098
Total.....	539,533	901,193	330,146	610,809	1,173,972	1,110,500

(a) Estimated.

## ANTIMONY

No antimony has been produced in Canada since 1917. Ores of antimony are known to occur in British Columbia, New Brunswick, Nova Scotia, Ontario, Quebec and the Yukon. The greater part of the Canadian output of refined antimony was produced in the years 1907, 1909, 1915, and 1916, by the Consolidated Mining and Smelting Company. The remainder was from the New Brunswick ores treated locally.

Table 25.—Production of Antimony in Canada, 1886-1924

Year	Antimony ore		Refined regulus	
	Tons	Value	Pounds	Value
		\$		\$
1886.....	665	31,490		
1887.....	584	10,860		
1888.....	345	3,696		
1889.....	55	1,100		
1890.....	26½	625		
1891.....	10	60		
1892-1897.....				
1898.....	1,344	20,000		
1899-1904.....				
1905 (a).....	527			
1906 (a).....	782			
1907.....	2,016	65,000	63,850	5,108
1908 (b).....	148	5,443		
1909.....	35	1,575	61,207	4,285
1910.....	364	13,906		
1911-1914.....				
1915.....	1,341	81,283	59,440	11,888
1916.....	885	94,537	107,185	41,823
1917.....	361	22,000		
1918-1924.....				

(a) As recorded by the Nova Scotia Department of Mines: no value given.

(b) Exports.

Table 26.—Imports of Antimony into Canada, 1922, 1923 and 1924

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
IMPORTS—						
Antimony or regulus of.....	405,646	22,340	900,483	57,882	780,271	70,982
Antimony salts.....	16,050	3,661	19,883	4,904	16,412	3,408
<b>Total.....</b>	<b>421,696</b>	<b>26,001</b>	<b>920,366</b>	<b>62,786</b>	<b>796,683</b>	<b>74,390</b>

Table 27.—Monthly Average Prices of Antimony, 1922, 1923 and 1924

(Compiled from quotations given in the *Engineering and Mining Journal-Press*—"Ordinaries" stand for Hungarian, Chinese, or other "Foreign" brands)

(At New York in cents per pound)

Month	1922	1923	1924
	Ordinaries	Ordinaries	Ordinaries
January.....	4-463	6-884	10-279
February.....	4-416	7-290	10-935
March.....	4-319	8-885	11-442
April.....	4-980	8-380	9-952
May.....	5-467	7-477	8-755
June.....	5-145	6-839	8-403
July.....	5-091	7-097	8-477
August.....	5-315	7-753	9-839
September.....	6-580	7-633	11-022
October.....	6-905	8-005	11-519
November.....	6-584	9-156	14-385
December.....	6-382	9-365	15-024
<b>Average.....</b>	<b>5-471</b>	<b>7-897</b>	<b>10-886</b>

Table 28.—World's Production of Antimony (a) 1913, 1920-1924

From "The Mineral Industry, 1921 and 1924."

(Metric tons)

Country	1913	1920	1921	1922	1923	1924
United States.....				4	9	33
Canada.....						
Mexico.....	2,340	1,572	45	457	490	370
Bolivia.....	30	(c) 588	(c) 336	(c) 185	(c) 312	(c) 621
Peru.....		6	7			
Hungary.....		314		67	643	
Austria.....	1,038			172		
Austria-Hungary.....	840					
Germany.....		644				
France.....	5,170	1,413	1,118	814	437	674
Italy.....	360	187	40	183	271	165
Portugal.....	10					
Spain.....						
Serbia.....	250	(c) 831	600	160		410
Algeria.....	186	(c) 1,000	(c) 103	(c) 530	(c) 500	(c) 905
British South Africa.....	30	73		1		
China.....	13,032	(c)13,109	(c)14,752	(c)14,316	(c)14,244	(d)13,168
Japan.....	20					
India.....			1			
Indo-China.....						
Asia Minor.....	240	400	400	400	400	400
Victoria.....	960	375	150	730	421	329
New South Wales.....	10	64	40			
Queensland.....						
Western Australia.....		3				
<b>Total.....</b>	<b>24,516</b>	<b>20,579</b>	<b>17,592</b>	<b>18,019</b>	<b>17,727</b>	<b>17,075</b>

(a) U. S. Geol. Surv., with additions from official reports; metal content of ore.

(b) Incomplete data; actual production probably larger.

(c) Exports.

(d) Statistics of Hunan Antimony Association.

## ARSENIC

Arsenic occurs in Canada in the arsenical gold ores of Nova Scotia and British Columbia and in the silver-cobalt-nickel ores of Ontario.

Arsenical ores from Nova Scotia and British Columbia are exported for treatment as are also some ores from Cobalt, but the major part of the Dominion output of arsenic is produced by the smelters situated in the southern part of Ontario which treat the ores from Cobalt. In 1924, arsenic production amounted to 4,621,567 pounds valued at \$348,293. Of this amount, Ontario contributed 3,745,225 pounds valued at \$313,281; British Columbia, 495,250 pounds valued at \$19,768; and Nova Scotia, 381,092 pounds valued at \$15,244. Arsenic credited to British Columbia and Nova Scotia, was recovered from ores exported for treatment in foreign smelters. In 1923, Ontario produced 5,158,617 pounds valued at \$582,785; British Columbia, 1,217,970 pounds valued at \$41,780, and Nova Scotia 45,000 pounds valued at \$2,250. During the year 1924, the price of arsenic decreased from 13.5 cents in January to 6.75 cents in December, averaging 9.63 cents for the year.

Arsenic is used mainly in the manufacture of insecticides and the annual consumption depends considerably on the activities of the boll-weevil, an insect which is very destructive to the southern cotton crop. In 1923, producers of insecticides looked for a large consumption in the following year. Apparently, this anticipated consumption did not take place with the result that the price of arsenic fell off towards the end of the year. The glass and tanning industries also consume considerable quantities of white arsenic.

Imports during the year amounted to 3,105 pounds having a value of \$319. Exports of white arsenic amounted to 545 tons valued at \$28,360; exports of arsenic contained in ore concentrates, etc., amounted to 1,304 tons valued at \$227,331.

Table 29.—Production of Arsenic in Canada, 1885-1924

Year	White Arsenic		Year	Arsenic in Ore*		White Arsenic	
	Tons	Value		Tons	Value	Tons	Value
		\$			\$		\$
1885.....	440	17,600	1907.....	656	11,094	330	36,209
1886.....	120	5,460	1908.....	986	17,506	716	41,060
1887.....	30	1,200	1909.....	224	3,346	1,129	64,100
1888.....	30	1,200	1910.....	547	5,716	1,502	75,328
1889.....	.....	.....	1911.....	.....	.....	2,097	76,237
1890.....	25	1,500	1912.....	.....	.....	2,045	89,262
1891.....	20	1,000	1913.....	.....	.....	1,692	101,463
1892-3.....	.....	.....	1914.....	.....	.....	1,737	104,015
1894.....	7	420	1915.....	.....	.....	2,396	147,830
1895-8.....	.....	.....	1916.....	.....	.....	2,186	262,349
1899.....	57	4,872	1917.....	280	11,200	2,656	658,231
1900.....	303	22,725	1918.....	1,078	43,114	2,482	520,525
1901.....	695	41,676	1919.....	530	21,218	2,859	488,706
1902.....	800	48,000	1920.....	628	22,231	1,831	425,617
1903.....	257	15,420	1921.....	.....	.....	1,491	233,763
1904-5.....	.....	.....	1922.....	518	21,097	2,058	299,940
1906.....	201	14,058	1923.....	631	44,030	2,579	582,785
			1924.....	513	39,185	1,798	309,108
<b>Total.....</b>				<b>6,591</b>	<b>239,737</b>	<b>33,584</b>	<b>4,516,528</b>

\*Computed as  $\text{As}_2\text{O}_3$ ; net value as reported by the operators.Table 30.—Production, Exports and Imports of Arsenic, ( $\text{As}_2\text{O}_3$ ), for Canada, 1922, 1923 and 1924

	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
From arsenical concentrates exported Tons	518	21,097	631	44,030	513	39,185
White arsenic..... “	2,058	299,940	2,579	582,785	1,798	309,108
<b>Total..... “</b>	<b>2,576</b>	<b>321,037</b>	<b>3,210</b>	<b>626,815</b>	<b>2,311</b>	<b>348,293</b>
<b>EXPORTS—</b>						
White arsenic (Arsenic n.o.p.)..... “	222	5,238	587	25,003	545	28,360
Arsenic in ore, concentrates, etc..... “	1,367	198,005	1,564	348,646	1,304	227,331
<b>IMPORTS—</b>						
White arsenic..... Lb.	958,120	70,718	457,422	66,280	3,105	319
Sulphide of arsenic..... “	8,294	1,066	7,339	1,244	14,387	2,008
Arseniate of soda..... “	7,961	1,402	4,940	475	1,687	220

Table 31.—Monthly Average Prices of Arsenic, 1922, 1923 and 1924

(From “Engineering and Mining Journal-Press”)

Month	New York in cents per pound		
	1922	1923	1924
January.....	7-50	13-00	13-50
February.....	7-50	14-00	13-00
March.....	7-50	14-50	12-50
April.....	7-00	14-25	11-00
May.....	7-00	14-10	10-50
June.....	7-25	13-50	9-50
July.....	7-50	11-00	8-50
August.....	8-00	9-50	8-00
September.....	9-00	10-75	7-75
October.....	10-50	11-50	7-50
November.....	11-00	13-50	7-00
December.....	13-00	13-50	6-75
<b>Average.....</b>	<b>8-56</b>	<b>12-75</b>	<b>9-63</b>

Table 32.—\*World's Production of Arsenic ( $\text{As}_2\text{O}_3$ ) 1913, 1920-1924

(From "The Mineral Industry, 1924")

(Metric tons)

Country	1913	1920	1921	1922	1923	1924
Belgium.....		463	485	1,008	1,380	
Canada (a).....	1,535	2,231	1,353	2,337	2,913	2,097
China (b).....	(c) 547	49	100	29	589	
France—White arsenic.....		606				
Ore.....	4,427	280	580	941		
Germany (d).....	1,892	2,077	2,000	2,000	4,245	10,552
Ore.....	5,721	6,007	6,902			
Greece.....		854	768			
Japan.....	21	933	1,395	967	1,176	
Mexico.....		2,183	785	2,044	4,287	
Portugal.....	925	653	268	271	1,402	1,293
Queensland.....		310	224	407	620	573
Rhodesia (e).....		396	327	451	774	534
Spain.....	47	76				
Union of South Africa.....		10	2	3	5	
United Kingdom—White arsenic.....	1,722	2,029	1,049	994	1,631	3,259
Pyrites.....	36	1,197		360	741	304
United States.....	2,280	10,434	4,342	9,096	12,946	13,112

(\*) White arsenic except where noted otherwise.

(a) Dominion Bureau of Statistics figures. (b) Exports. (c) Arsenic trisulphide.

(d) Estimated arsenic in ore. (e) Ore.

## CHROMITE

There was no production of chromite in Canada in 1924. In 1923, production totalled 3,558 tons, valued at \$52,650. During the same year, Canadian exports amounted to 3,750 tons with a value of \$64,890.

The mineral chromite ( $\text{FeO}$ ,  $\text{Cr}_2\text{O}_3$ ) is the commercial source of the metal chromium, which is of prime importance in the manufacture of chrome steel armour plate and other steels used in warfare. This metal is a necessary constituent of many high-speed cutting tools, and, in the manufacture of stainless steels, where it makes up from 12 to 14 per cent of the alloy, its use is well established.

Quebec has been the main source of chromite ore in Canada. Rhodesia, India and New Caledonia, supply over 90 per cent of the world's chromite.

During the war when the higher grades of ore from other continents were not easily obtainable, many low-grade deposits in Canada and the United States were opened up, and considerable metallurgical research was done in Canada on the reduction of chromium from the ore. When hostilities ceased, the demand fell off, with the result that the preliminary work then under way, was discontinued. Chromium metal may be obtained from chromium oxide by reduction with aluminium. The metal made in this manner is very pure and free from carbon. In less pure form, it has been made in the electric furnace directly from the ore. The resultant product made in this manner contains small percentages of iron and carbon but not enough to cause any serious trouble when the metal is used in alloys with other metals. Ferro-chrome, also a product of the electric furnace, is made from a good grade of chromite ore, and the iron chromite alloy runs about 60 to 70 per cent chromium. This alloy can then be added in the required amounts to a bath of molten steel. Ferro-chrome requirements take about 40 per cent of the world's supply of chromite; about 35 per cent of the chromite produced is used in the manufacture of chromite refractories such as brick and other furnace linings and 25 per cent is used in the manufacture of chemicals.

Table 33.—Production of Chromite in Canada, 1886-1924.

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1886.....	60	945	1908.....	7,225	82,008
1887.....	38	570	1909.....	2,470	26,604
1888-93.....			1910.....	299	3,734
1894.....	1,000	20,000	1911.....	157	2,587
1895.....	3,177	41,300	1912-13.....	136	1,210
1896.....	2,342	27,004	1914.....	12,341	179,543
1897.....	2,637	32,474	1915.....	(a) 27,517	311,460
1898.....	2,021	24,252	1916.....	(a) 36,725	499,682
1899.....	2,010	21,842	1917.....	21,994	867,122
1900.....	2,335	27,000	1918.....	8,541	228,898
1901.....	1,274	16,744	1919.....	11,016	251,379
1902.....	900	13,000	1920.....	2,798	55,696
1903.....	3,509	51,129	1921.....	767	11,503
1904.....	6,074	67,146	1922.....	3,558	52,650
1905.....	8,575	93,301	1923.....		
1906.....	9,035	91,859	1924.....		
1907.....	7,196	72,901			
			<b>Total.....</b>	<b>187,727</b>	<b>3,175,543</b>

(a) A portion of this ore was sold to a customs mill in the district and the final shipments of ores and concentrates in 1916 were 15,249 short tons valued at \$310,902 or an average of \$20.39 per ton; and 23,713 tons valued at \$581,796 or an average of \$24.54 per ton in 1917.

Table 34.—Production in Canada, Imports and Exports of Chromite, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
<b>PRODUCTION—</b>		\$		\$		\$
Quebec—Chromite.....	767	11,503	3,558	52,650		
<b>EXPORTS.....</b>	<b>773</b>	<b>8,286</b>	<b>3,750</b>	<b>64,890</b>		
<b>IMPORTS—</b>						
Bichromate of soda.....	720	118,872	693	103,093	877	126,670
Bichromate of potash.....	48	10,283	44	9,770	128	22,661

Table 35.—World's Production of Crude Chromite, 1913, 1920-1924

(From "The Mineral Industry, 1919 and 1924.")

(Metric tons)

Country	1913	1920	1921	1922	1923	1924
Brazil.....		3,506				
Bosnia.....	305					
Canada*.....		9,996	2,538	696	3,228	
Cuba.....		721	610	1	10,587	8,276
Greece.....	6,342	7,382	8,029	9,213 (b)	14,509	
Guatemala.....		1,122	401			
India.....	5,670	27,232	35,322	23,144	55,115	
Japan.....		3,967	3,368	3,756	4,528	
New Caledonia (a).....	63,370	91,536	29,458	10,718	23,226	15,292
Queensland.....		161				
Rhodesia.....	63,384	54,674	45,533	84,799	87,702	156,692
Russia.....		2,360	2,220 (b)	1,500 (c)	970 (c)	4,750
Turkey.....	26,374	25,000 (b)	10,000	2,540		
United States.....	259	2,542	256	361	231	293

\* Dominion Bureau of Statistics figures.

(a) Exports. (b) Estimated in part. (c) Fiscal year ending Oct. 1.

## COBALT

Cobalt production in 1924 amounted to 948,704 pounds valued at \$1,682,395. Exports of cobalt including metals, oxides and various salts were valued at \$1,302,277.

The Canadian cobalt production is made up of the cobalt in the various products sold by the south Ontario smelters plus the cobalt contained in ores and residues exported, and the value given is the selling value at the plant as reported by the producing companies.

Silver-cobalt-nickel ores from the Cobalt district of northern Ontario have provided the larger proportion of the world's supply for cobalt since that camp was discovered in 1903. The Coniagas Reduction Company of Thorold, Ontario, and the Deloro Smelting and Refining Company at Deloro, Ontario, developed processes for the recovery of cobalt from these ores. Recovery of this metal is accomplished by feeding the ore into a blast furnace where a speiss is made containing silver, cobalt, nickel, a small amount of iron and other metals which occur in the ore. The speiss is then roasted in order to free it from arsenic and then chloridized, leached with sulphuric acid to extract the copper and cyanided to dissolve the silver. Silver in the cyanide solution is precipitated by means of aluminium dust. The "speiss residues" then remaining are transferred to another plant where the cobalt and nickel oxides are precipitated. In some cases the speiss residues are exported to foreign countries where the cobalt, nickel and silver are recovered.

Cobalt oxide is marketed either in the black or gray form; the black oxide contains about 70 per cent cobalt metal and the gray, about 75 per cent cobalt metal. Gray oxide is made by giving the black oxide a slight roast in a reverberatory furnace in a reducing atmosphere. Cobalt salts of various kinds are also made, and if the pure metal is required, the black oxide is reduced in the reverberatory furnace using charcoal as the reducing agent.

The market for cobalt which was very poor in 1915 gradually improved during the war. No quotations on the New York market were available during 1918, 1919 and 1920. During 1921 the quotations given in the *Engineering and Mining Journal-Press* ranged from \$3 to \$3.50 per pound; the former value was used in computing the annual production values. In 1922, the average price \$3.25 per pound, was used. In 1923, the quotation, \$2.85 was used, but in 1924 the value given in the report was based on the returns actually received by the operators for the products sold; this averaged about \$1.77 per pound of metal. The New York quotation for metal in 1924 was \$2.75 per pound.

**Bounties.**—Under the provisions of the *Metal Refining Bounty Act*, passed by the Ontario Legislature in 1907, bounties were paid to refineries amounting to \$126,987.08 on cobalt metal, cobalt oxide, and salts of cobalt, and \$43,153.85 on nickel oxide, and salts of nickel, or a total for both cobalt and nickel of \$170,140.93. The quantities produced and the bounties paid each year are given in detail in the annual reports of the Ontario Bureau of Mines.

The bounty was at the rate of 6 cents per pound on the metallic content of the oxides. The Act which expired in April, 1917, was not re-enacted.

An historical summary of the production in Canada which dates from the year 1904 is shown in the following table. For the years 1904 to 1910 inclusive, the figures given were prepared by the Ontario Bureau of Mines, and represent the estimated cobalt content of the ores shipped from the mines. From 1911 to date, the quantities given are the cobalt content of all smelter products sold or shipped, such as cobalt metal, the oxides, mixed oxides and residues, etc.

Table 36.—\*Production of Cobalt from Canadian Ores, 1904-1924

Year	Pounds	Year	Pounds	Year	Pounds
1904.....	32,000	1911.....	1,704,000	1918.....	737,157
1905.....	236,000	1912.....	663,093	1919.....	530,371
1906.....	642,000	1913.....	865,937	1920.....	546,023
1907.....	1,478,000	1914.....	871,891	1921.....	251,986
1908.....	2,448,000	1915.....	504,212	1922.....	616,088
1909.....	3,066,000	1916.....	840,536	1923.....	760,105
1910.....	2,196,000	1917.....	1,079,572	1924.....	948,704

\*See preceding paragraph.

Table 37.—Summary of Cobalt Production Statistics for Canada, 1923 and 1924

	1923			1924		
	Total quantity	Cobalt content	Value as reported by smelters	Total quantity	Cobalt content	Value as reported by smelters
	Tons	Lb.	\$	Tons	Lb.	\$
Ores and residues treated.....	7,725			5,253		
Output of smelters as metallic cobalt, cobalt oxide, unseparated oxides, cobalt salts, speiss and other residues, and cobalt ores and residues exported.....		760,105	1,806,842		948,704	1,682,395

Table 38.—Imports into Canada and Exports of Cobalt, 1922, 1923 and 1924

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
IMPORTS—						
Ore.....	200	233	600	576		
<b>Total</b> .....	<b>200</b>	<b>233</b>	<b>600</b>	<b>576</b>		
EXPORTS—						
Cobalt metal.....	111,830	288,776	239,614	571,908	170,513	382,225
Cobalt oxides and salts.....	430,024	770,511	486,239	886,746	490,505	908,122
Cobalt alloys.....	4,022	21,398	422	1,997	2,421	11,930
<b>Total</b> .....		<b>1,080,685</b>		<b>1,460,651</b>		<b>1,302,277</b>

Table 39.—Imports of Cobalt into the United States 1919-1924

(From "The Mineral Industry", 1924)

Year	Ore		Cobalt		Zaffer		Oxide	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$		\$
1919.....	17,045	2,832	60,511	141,450			131,424	184,751
1920.....	13,039	4,794	143,603	326,864	220	14	202,724	399,605
1921.....	7,657	3,235	38,442	105,539			164,003	342,426
1922.....	5,195	7,075	126,364	321,396			217,530	435,895
1923.....	58,719	56,326	225,639	552,434			258,594	511,993
1924.....	27,786	37,276	118,952	264,935			226,703	440,898

Table 40.—Monthly Average Prices of Cobalt, 1922, 1923 and 1924

Month	(a) London in shillings per pound			(b) New York in cents per pound		
	1922	1923	1924	1922	1923	1924
January.....	14/	11/	12/	325	285	300
February.....	14/	11/	12/	325	285	275
March.....	14/	11/	12/	325	285	275
April.....	13/	11/	12/	325	285	275
May.....	12/	11/	12/	325	285	275
June.....	12/	11/	12/	325	285	275
July.....	12/	11/	11/	325	300	275
August.....	11/	11/	12/	325	300	275
September.....	11/	12/	12/	325	300	275
October.....	11/	12/	12/	325	300	275
November.....	11/	12/	12/	325	300	275
December.....	11/	12/	12/	325	300	275

(a) From "The Mining Journal," London, E.C.

(b) From "Engineering and Mining Journal-Press," New York.

## COPPER

## CANADA

Production of copper during 1924 amounted to 104,457,447 pounds which at the average New York price during the year of 13.024 cents per pound amounted in value to \$13,604,538 as against 86,881,537 pounds valued at \$12,529,186 or an average price of 14.421 cents per pound in the preceding year. The increase amounted to 20.2 per cent in quantity and 8.5 per cent in total value.

Production in 1924 included (a) 35,109,895 pounds of blister copper, (b) 36,979,424 pounds of copper in matte some of which was exported and some refined in Canada, (c) 31,825 pounds contained in copper sulphate, (d) 32,336,303 pounds, the estimated recoveries from ores and concentrates exported. The corresponding figures for 1923 were (a) 31,384,817 pounds, (b) 31,538,710 pounds, (c) 76,784 pounds and (d) 23,881,226 pounds. Refined copper was produced commercially in quantity for the first time in Canada in 1916 at the Trail refinery of the Consolidated Mining and Smelting Company. The copper refinery of this company was not operated during 1923 but it produced a small quantity in 1924. The British America Nickel Corporation which produced refined copper at the Deschenes plant for the first time in 1920, went into liquidation during July, 1924. The total production of refined copper in Canada during the past nine years was as follows:

Calendar year	1916.....	483 tons
"	" 1917.....	3,901 "
"	" 1918.....	3,809 "
"	" 1919.....	3,467 "
"	" 1920.....	2,590 "
"	" 1921.....	2,143 "
"	" 1922.....	365 "
"	" 1923.....	824 "
"	" 1924.....	1,768 "

Copper sulphate is produced at Trail, B.C., by the Consolidated Mining and Smelting Company and a small amount by the Coniagas Reduction Company, Thorold, Ont. The amounts produced were 643,910 pounds in 1921; 230,835 pounds in 1922; 307,135 pounds in 1923; and 127,301 pounds in 1924.

Copper sulphate is a by-product in the parting of gold and silver by the action of boiling concentrated sulphuric acid, the silver being dissolved as the sulphate and recovered by precipitating it with metallic copper. Copper sulphate may also be produced by treating scrap copper with a spray of dilute sulphuric acid in the presence of air. Copper sulphate forms blue crystals soluble in water. Heated to 240° C., it loses its water of crystallization and becomes a white anhydrous powder. Blue vitriol, or copper sulphate in solution, is used in the preparation of insecticides and germicides, and for many other purposes.

Table 41.—Production of Copper from Canadian Ores, 1886-1924

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per pound
		\$				\$	
1886.....	3,505,000	385,550	11.00	1905.....	48,092,753	7,497,660	15.590
1887.....	3,260,424	366,798	11.25	1906.....	55,609,888	10,720,474	19.278
1888.....	5,562,864	927,107	16.66	1907.....	56,979,205	11,398,120	20.004
1889.....	6,809,752	936,341	13.75	1908.....	63,702,873	8,413,876	13.208
1890.....	6,013,671	947,153	15.75	1909.....	52,493,863	6,814,754	12.982
1891.....	9,529,401	1,226,703	12.87	1910.....	55,692,369	7,094,094	12.738
1892.....	7,087,275	818,580	11.55	1911.....	55,648,011	6,886,998	12.376
1893.....	8,109,856	871,809	10.75	1912.....	77,832,127	12,718,548	16.341
1894.....	7,708,789	736,960	9.56	1913.....	76,976,925	11,753,606	15.269
1895.....	7,771,639	836,228	10.76	1914.....	75,735,960	10,301,606	13.602
1896.....	9,393,012	1,021,960	10.88	1915.....	100,785,150	17,410,635	17.275
1897.....	13,300,802	1,501,660	11.29	1916.....	117,150,028	31,867,150	27.202
1898.....	17,747,136	2,134,980	12.03	1917.....	109,227,332	29,687,989	27.180
1899.....	15,078,475	2,655,319	17.61	1918.....	118,769,434	29,260,536	24.628
1900.....	18,937,138	3,065,922	16.19	1919.....	75,053,581	14,028,265	18.691
1901.....	37,827,019	6,096,581	16.117	1920.....	81,600,691	14,244,217	17.456
1902.....	38,804,259	4,511,383	11.626	1921.....	47,620,820	5,953,555	12.502
1903.....	42,684,454	5,649,487	13.235	1922.....	42,879,818	5,738,177	13.382
1904.....	41,383,722	5,306,635	12.823	1923.....	86,881,537	12,529,186	14.421
				1924.....	104,457,447	13,604,538	13.024

## PRODUCTION OF COPPER IN CANADA 1886-1922

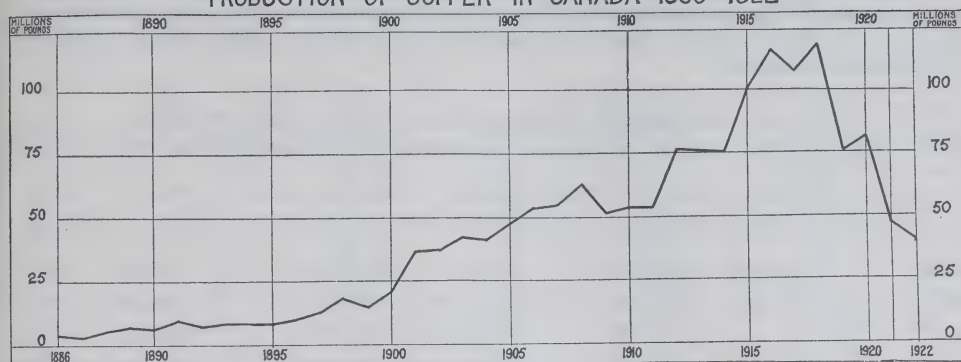


Table 42.—Production of Copper from Canadian Ores, by Provinces, 1922, 1923 and 1924

Province	1922			1923			1924		
	Pounds	Value	Per cent	Pounds	Value	Per cent	Pounds	Value	Per cent
Quebec.....		\$			\$			\$	
Ontario.....	10,943,636	1,464,477	25.5	31,656,800	4,565,227	36.5	1,893,008	246,546	1.8
Manitoba.....							37,113,193	4,833,622	35.5
British Columbia.....	31,936,182	4,273,700	74.5	55,224,737	7,963,959	63.5	65,451,246	8,524,370	62.7
Yukon.....									
<b>Total.....</b>	<b>42,879,818</b>	<b>5,738,177</b>	<b>100.0</b>	<b>86,881,537</b>	<b>12,529,186</b>	<b>100.0</b>	<b>104,457,447</b>	<b>13,604,538</b>	<b>100.0</b>

## QUEBEC

Although no production of copper ore was reported for the province of Quebec during 1923, there was an output in 1924 of 1,893,008 pounds of recoverable copper including 1,855,976 pounds derived from the pyritic ores exported and 37,032 pounds in lead ores exported.

Table 43.—Production of Copper from Quebec Ores, 1886-1924

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	3,340,000	367,400	1900.....	2,220,000	359,418	1914.....	4,201,497	571,488
1887.....	2,937,900	330,514	1901.....	1,527,442	246,178	1915.....	4,197,482	725,115
1888.....	5,562,864	927,107	1902.....	1,640,000	190,666	1916.....	5,703,347	1,551,424
1889.....	5,315,000	730,813	1903.....	1,152,000	152,467	1917.....	5,015,560	1,363,229
1890.....	4,710,606	741,920	1904.....	760,000	97,455	1918.....	5,869,649	1,445,577
1891.....	5,401,704	695,469	1905.....	1,621,243	252,752	1919.....	2,691,695	503,105
1892.....	4,883,480	564,042	1906.....	1,981,169	381,930	1920.....	880,638	153,724
1893.....	4,468,352	480,348	1907.....	1,517,990	303,659	1921.....	352,308	44,045
1894.....	2,176,430	208,067	1908.....	1,282,024	169,330	1922.....		
1895.....	2,242,462	241,288	1909.....	1,088,212	141,272	1923.....		
1896.....	2,407,200	261,903	1910.....	877,347	111,757	1924.....	1,893,008	246,546
1897.....	2,474,970	279,424	1911.....	2,436,190	301,503			
1898.....	2,100,235	252,658	1912.....	3,282,210	536,346			
1899.....	1,632,560	287,494	1913.....	3,455,887	527,679	<b>Total.....</b>	<b>105,300,661</b>	<b>16,745,112</b>

## ONTARIO

In Ontario, statistics of copper production include the amounts of recoverable copper in copper-nickel matte made in the smelting of the nickel ores, copper in cobalt flotation concentrates exported, and the copper in gold ores and concentrates exported. As thus computed the total production for the year amounted to 37,113,193 pounds; of this amount copper in the matte made contributed 36,979,424 pounds.

The bounty offered by the Ontario Government on copper, 95 per cent pure and on copper sulphate produced from ore mined and refined in the province was never gained, and the Act known as the *Metal Refining Bounty Act* warranting this bounty which expired April 10, 1917, was not re-enacted.

**Table 44.—Production of Copper from Ontario Ores, 1886-1924**

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	165,000	18,150	1899.....	5,723,324	1,007,877	1912.....	22,250,601	3,635,971
1887.....	322,524	36,284	1900.....	6,740,058	1,091,215	1913.....	25,885,929	3,952,522
1888.....			1901.....	8,695,831	1,401,507	1914.....	28,948,211	3,937,536
1889.....	1,466,752	201,678	1902.....	7,408,202	861,278	1915.....	39,361,464	6,799,693
1890.....	1,303,065	205,233	1903.....	7,172,533	949,285	1916.....	44,997,035	12,240,094
1891.....	4,127,697	531,234	1904.....	4,913,594	630,070	1917.....	42,867,774	11,651,461
1892.....	2,203,795	254,538	1905.....	8,779,259	1,368,686	1918.....	47,074,475	11,593,502
1893.....	3,641,504	391,461	1906.....	10,638,231	2,050,838	1919.....	24,346,623	4,550,627
1894.....	5,207,679	497,854	1907.....	14,104,337	2,821,432	1920.....	32,059,993	5,596,392
1895.....	4,576,337	492,414	1908.....	15,005,171	1,981,883	1921.....	12,821,385	1,602,930
1896.....	3,167,256	344,598	1909.....	15,746,699	2,044,237	1922.....	10,943,636	1,464,477
1897.....	5,500,652	621,023	1910.....	19,259,016	2,453,213	1923.....	31,656,800	4,565,227
1898.....	8,375,223	1,007,539	1911.....	17,932,263	2,219,297	1924.....	37,113,193	4,833,622
<b>Total.....</b>							<b>582,503,121</b>	<b>101,906,878</b>

#### MANITOBA

During the years 1917 to 1920 the province of Manitoba was on record as one of the copper-producing provinces in Canada. The total production for the four years amounted to 9,866,328 pounds having a total value of \$2,039,942. The record was as follows—1917—1,116,000 pounds, valued at \$303,329; 1918—2,339,751 pounds valued at \$576,234; 1919—3,348,000 pounds valued at \$625,775 and 1920—3,062,577 pounds valued at \$534,604. These amounts were estimated as the recoverable copper in ores shipped by the Mandy Mining Company operating near Schist Lake in The Pas district of Northern Manitoba. During 1921, 1922, 1923, and 1924 with increasing production costs, high freight rates, and other transportation difficulties it was found impossible to operate and no copper ores were shipped.

Much development has been carried on in this district during the past nine years. Towards the end of 1919 the Mandy Mining Company suspended operations, and has since sold its equipment, which has been installed on the Flin Flon group of claims on Flin Flon Lake in the same district.

#### BRITISH COLUMBIA

British Columbia, the greatest copper producing province of the Dominion, was credited in 1924 with a production of 65,451,246 pounds, as against 55,224,737 pounds in 1923, an increase of 19 per cent. The British Columbia output amounted to 62.5 per cent of the total Canadian production for 1924 and 63.5 per cent of the total for 1923.

In the total there are included the quantities of blister copper produced at Anyox by the Granby Consolidated Mining and Smelting Company, the blister copper and the copper contained in copper sulphate made by the Consolidated Mining and Smelting Company at Trail, and copper estimated as recoverable from the ores and concentrates exported. The Britannia mine on the shore of Howe Sound, a short distance north of Vancouver, is one of the largest producers of copper concentrates and ore which are shipped to Tacoma, Washington, U.S.A., for smelting.

Table 45.—Production of Copper from British Columbia Ores, 1894-1924

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1894*.....	324,680	31,039	1905*.....	37,692,251	5,876,222	1916.....	63,642,550	17,312,046
1895*.....	952,840	102,526	1906*.....	42,990,488	8,287,706	1917.....	57,730,959	15,691,275
1896*.....	3,818,556	415,459	1907*.....	40,832,720	8,168,177	1918.....	62,865,681	15,482,560
1897*.....	5,325,180	601,213	1908.....	37,041,115	4,892,390	1919.....	44,502,079	8,317,884
1898*.....	7,271,678	874,783	1909.....	35,658,952	4,629,245	1920.....	45,319,771	7,911,019
1899*.....	7,722,591	1,359,948	1910.....	35,270,006	4,492,693	1921.....	34,447,127	4,306,580
1900*.....	9,977,080	1,615,289	1911.....	35,279,558	4,366,198	1922.....	31,936,182	4,273,700
1901*.....	27,603,746	4,448,896	1912.....	50,526,656	8,256,561	1923.....	55,224,737	7,963,959
1902*.....	29,636,057	3,445,488	1913.....	45,791,579	6,991,916	1924.....	65,451,246	8,524,370
1903*.....	34,359,921	4,547,735	1914.....	41,219,202	5,606,636			
1904*.....	35,710,128	4,579,110	1915.....	56,692,988	9,793,714	<b>Total.....</b>	<b>1,082,818,304</b>	<b>183,166,337</b>

\*Metal content of ores shipped as published by the Provincial Bureau of Mines.

## YUKON

There are important deposits of copper bearing ore known to exist in the Yukon Territory some of which were operated during the period from 1906 until 1920. Since the latter year, no production of copper has been reported, and the grand total for the Territory remains at 12,912,507 pounds, or a little greater than that of Manitoba.

Table 46.—Production of Copper from Yukon Ores 1906-1924

Year	Pounds	Value	Year	Pounds	Value
		\$			\$
906 (and previous).....	156,000	23,400	1914.....	1,367,050	185,946
1907.....	511,838	102,388	1915.....	533,216	92,113
1908.....	112,264	14,828	1916.....	2,807,096	763,586
1909.....			1917.....	2,460,079	668,650
1910.....	286,000	36,431	1918.....	619,878	152,663
1911.....			1919.....	165,184	30,874
1912.....	1,772,660	289,670	1920.....	277,712	48,478
1913.....	1,843,530	281,489	1921-1924.....		
			<b>Total.....</b>	<b>12,912,507</b>	<b>2,690,516</b>

**Exports and Imports.**—During the year 1920, the exports of copper from Canada reached its peak, and in its various forms amounted in value to \$15,877,306. In 1924 the total exports amounted in value to \$12,598,884. This marked an increase over the previous year when the total exports were valued at \$10,104,714. The two major export items were "copper blister" valued at upwards of 6 million dollars, and "copper contained in ore" which accounted for better than 5 million dollars.

Pig copper, amounting to 2,405,800 pounds with a value of \$284,780, was exported from Canada during the year. Imports into Canada of manufactured copper were valued at \$6,338,078, a decrease of about 2 million dollars from the 1923 totals.

Table 47 shows a list of copper commodities imported into and exported from Canada during the three years 1922, 1923 and 1924.

Table 47.—Imports into Canada and Exports of Copper, 1922, 1923 and 1924

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>Imports—</b>						
Copper, in bars or rods, when imported by manufacturers of trolley, telegraph and telephone wires, electric wires and electric cables, for use only in the manufacture of such articles in their own factories.....	23,403,100	3,334,793	27,493,200	4,354,715	14,250,000	1,982,922
Copper, in bars or rods, in coil or otherwise, in lengths of not less than 6 feet, unmanufactured.....	445,900	80,701	1,463,800	284,484	757,000	143,322
Copper in blocks, pigs or ingots.....	1,145,463	159,671	8,167,041	1,215,349	12,083,131	1,591,958
Copper, old and scrap.....	1,470,900	205,447	3,046,400	432,362	1,896,200	246,632
Copper ore and concentrates.....	200	121	500	259		
Copper, in strips, sheets or plates, not polished, planished or coated.....	2,293,800	497,013	2,389,300	551,166	1,861,900	330,431
Copper tubing in lengths of not less than 6 feet, and not polished, bent or otherwise manufactured.....	898,976	212,061	1,539,791	415,133	1,509,734	354,741
Copper wire, plain, tinned or plated.....	102,475	26,331	213,174	55,478	242,870	71,899
Copper wire cloth, or woven wire of copper.....		13,510		19,858		7,462
Copper wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....		232,872		390,566		296,221
Copper, all other manufactures of, n.o.p.....		351,684		429,327		420,611
Copper, precipitate of, crude.....	450	25				
Anodes of nickel, zinc, copper, silver or gold.....		2,757		1,504		5,288
Copper, sub-acetate of, or verdigris, dry.....	988	326	3,782	860	683	201
Copper, sulphate of (blue vitriol).....	3,097,450	167,503	3,374,871	176,858	2,866,760	142,994
Copper bars for use in the manufacture of rods to be used in the manufacture of electrical conductors, and copper rods for such manufacture, units not exceeding the area of 7/8 gauge conductor.....					5,114,600	682,369
Copper, sulphate of, dehydrated, for agriculture or spraying purposes.....					243,088	11,027
<b>Total.....</b>		<b>5,284,825</b>		<b>8,327,919</b>		<b>6,338,078</b>
<b>Exports—</b>						
Copper, fine, contained in ore, matte, regulus, etc.....	19,063,100	1,730,681	34,548,000	3,607,031	49,545,800	5,346,489
Copper, blister.....	32,031,300	4,204,136	39,968,000	5,556,698	47,935,700	6,008,409
Copper, old and scrap.....	3,324,000	334,673	1,575,000	187,302	2,198,100	226,993
Copper, pig.....					2,405,800	284,780
Copper in bars, rods, strips, sheets, plates and tubing.....	6,800	1,247	826,000	104,028	170,400	39,500
Copper wire and cable.....		208,683		387,359		636,597
Copper mfrs., n.o.p.....		53,569		262,296		56,116
<b>Total.....</b>		<b>6,532,989</b>		<b>10,104,714</b>		<b>12,598,884</b>

**Prices**—According to the *New York Engineering and Mining Journal-Press*, the average price of copper for 1924 was 13.024 cents per pound as against 14.421 cents per pound in 1923. In January, the price stood at 12.401 cents, rose to 13.515 cents in March, gradually receded to the low price for the year of 12.327 cents in June and then, with a few fluctuations, rose to an average of 14.260 cents in December, the highest price for the year.

The *Internal Trade Branch* of the Dominion Bureau of Statistics has compiled the following statement on the prices of copper.

## POST WAR COPPER PRICES

Copper is one of the few commodities whose price in recent years has fluctuated about its pre-war level. The average for 1924, according to Dominion Bureau of Statistics records, was actually lower than for 1913. The average 1913 price of American electrolytic copper at Montreal, was \$15.72 per cwt. In March 1917 the peak was reached when the price was \$38.65. The yearly average prices for 1921, 22, 23 and 24 were \$16.32, \$16.04, \$17.02 and \$15.31 respectively. At the commencement of 1924 the trend was upward from \$14.70 in January to \$16.20 in March, this movement being a continuation of the activity which had commenced at the end of 1923. With March there was a severe reaction caused by a general slowing up of business and also, in the case of metals, due to the movements of French exchange. Speculators in several countries, especially Germany, used the metal market as a medium for speculation in francs. The unexpected rise in the value of that currency forced the liquidation of large quantities of metals thus depressing prices. The market remained unsettled until August when it rose to \$15.50 and although there were some recessions after that, the influence of generally rising values for non-ferrous metals carried it up to \$16.30 in December. The index number for copper computed by the Dominion Bureau of Statistics based on 1913 prices was 93.5 in January 1924 and 103.7 in December. For the year it was 97.4.

Copper being an international commodity its price is subject to world-wide conditions of demand and supply, which are in their turn affected by the political and financial situation in the various supplying and consuming countries. Before the war the United States was the biggest producer of copper and Europe the largest consumer. Now the United States is both the greatest producer and consumer. That country produces between 50 and 60 per cent of the total world supply and she consumes about as much. Imports from South American mines augment her supply and she has a surplus for export. Consumption in the States in 1923 was over 80 per cent more than in 1913. Europe in the same year consumed 38 per cent less than in 1913. In 1913 Europe consumed over 60 per cent of the world's output but in 1923 less than 33 per cent of it.

The increased consumption in the United States is chiefly due to the development of the electrical trade and next to it the automobile trade. But the expansion of the copper mining industry in the United States during the war and the increasing output in South America and Africa have kept the supply side as a rule in a weaker position. Europe is the key to the situation and her demands have as yet been disappointing. It is claimed that a vast potential demand exists there for electrical development and upon this European development the future of copper prices seems largely to depend.

Canadian production which was about 38,000 tons in 1913 had increased to 60,000 in 1918, but the war-time capacity has not since been called fully into play, though in 1923 and 1924 production exceeded pre-war figures, being 43,000 tons in 1923 and 53,000 in 1924.

The following survey of the copper market since the war sheds additional light on the present situation.

In 1917 American production was 50 per cent over pre-war. The end of the war in 1918 found Germany and the Allies with large stocks of copper and scrap and America with a greatly increased producing capacity and also large stocks of metal. At the end of 1918 the world demand was not absorbing current output, while on the supply side surplus stocks, as well as current production, were being offered for sale. At the end of 1918 and early in 1919 prices fell. Production was reduced, but though only 50 per cent of capacity, it exceeded consumption. Later in 1919 due to great expectations regarding demands, prices rose sharply. Production and stocks increased in America but European demands were disappointing and prices were again downward. In the early part of 1920 prices showed stronger tendencies because of active trading. American consumption increased and export trade was almost at pre-war levels. Production increased. Beginning with August, however, a price decline commenced which was continued well on into 1921. This slump was part of the general depression which commenced in 1920. It led to a reduction in production. Taking the year 1920 as a whole exports from the United States were 72 per cent of 1913 figures, refiners' production of new copper about 95 per cent of 1913 and apparent consumption (exclusive of deliveries of government stocks) about 160 per cent. World production and consumption were both pretty close to pre-war figures. Stocks of refined copper in the United States were about 556,000,000 pounds (exclusive of government stocks) at the end of 1920 as compared with 619,000,000 in 1919 and 90,000,000 in 1913. 1921 was characterized in the copper industry, as in most others, by great depression. Large copper producers decided upon a policy of restriction of output. There was a wide spread shutting down of mines over the whole American continent. The copper association took 175,000 tons off the market and held them in reserve for export purposes. Demand improved at the end of the year, prices rose, stocks were drawn on and consumption exceeded production. Taking 1921 as a whole exports from the United States were 68 per cent, refiners' production of new copper 63 per cent and apparent consumption 82 per cent of 1913. World production was 59 per cent and world consumption (based on figures obtained by deducting stocks at the end of the year from total production and stocks at the beginning of the year) was over 80 per cent of 1913 figures. Stocks of refined copper had been reduced in the United States to 482,000,000 pounds. Government stocks in the United States which had amounted to about 225,000,000 pounds at the beginning of 1919 had been reduced to about 25,000,000 pounds by the end of 1921. By this date practically all government stocks were absorbed and less than 100,000 tons of scrap remained.

The higher prices prevailing at the end of 1921 caused a reaction in demand which was succeeded by another fall in prices. Early in the year, however, there was a renewal of business activity and, though copper prices oscillated at times, the general movement was toward higher levels from May into the first quarter of 1923. During 1922 exports from the United States were 85 per cent, refiners' production of new copper 82 per cent and apparent consumption 138 per cent of 1913 figures. World production was about 90 per cent and world consumption above 90 per cent of 1913 figures. Stocks of refined copper in the United States had been reduced further to 262,000,000 pounds.

Up to May 1923 copper was in great demand and prices moved up rapidly. This was due to American activity, however, for European demand was relatively poor. Higher prices increased production. There followed a falling off of demand and prices fell almost to the end of the year. During 1923 exports from the United States were 90 per cent, refiners' production of new copper 126 per cent and apparent consumption 182 per cent of 1913. World production was about 130 per cent and consumption 99 per cent of 1913. Stocks of refined copper had increased to 281,000,000 pounds.

Table 48.—Monthly Average Prices of Copper, New York and London, 1922, 1923 and 1924

(From the *Engineering and Mining Journal-Press.*)

Month	Electrolytic Copper					
	New York in cents per pound			London, £ Sterling per ton of 2,240 pounds		
	1922	1923	1924	1922	1923	1924
January.....	13.465	14.510	12.401	72.321	71.409	67.193
February.....	12.864	15.355	12.708	66.125	74.500	68.167
March.....	12.567	16.832	13.515	65.739	81.464	72.087
April.....	12.673	16.663	13.206	64.028	81.331	70.150
May.....	13.111	15.440	12.772	66.554	76.568	67.648
June.....	13.575	14.663	12.327	69.333	73.238	66.313
July.....	13.654	14.321	12.390	70.321	72.364	65.815
August.....	13.723	13.822	13.221	69.932	70.000	67.800
September.....	13.748	13.323	12.917	70.917	68.275	67.125
October.....	13.632	12.574	12.933	70.693	64.250	66.620
November.....	13.598	12.727	13.635	70.216	66.477	68.063
December.....	14.074	12.823	14.260	70.132	67.611	69.762
Average.....	13.382	14.421	13.024	68.859	72.291	68.062

Table 49.—\*World's Production of Copper 1913, 1920-1924

(From the *Year Book of the American Bureau of Metal Statistics, 1922 and 1924.*)

(Short tons)

Country	1913	1920	1921	1922	1923	1924
<b>NORTH AMERICA—</b>						
United States.....	614,255	635,248	238,420	511,970	754,000	819,000
Mexico.....	58,185	49,866	13,576	29,842	60,538	49,150
Canada(a).....	38,460	39,121	22,632	25,300	40,230	51,008
Cuba.....	3,747	7,491	8,600	11,788	11,962	12,742
<b>Total, North America.....</b>	<b>714,647</b>	<b>731,726</b>	<b>283,228</b>	<b>578,900</b>	<b>866,731</b>	<b>931,900</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	4,077	10,910	10,674	10,154	11,744	8,200
Chile.....	46,574	109,075	65,299	142,830	201,042	209,855
Peru.....	30,609	36,356	36,689	40,133	48,684	38,495
Venezuela.....			800	1,075	1,175	1,230
<b>Total, South America.....</b>	<b>81,260</b>	<b>156,341</b>	<b>113,462</b>	<b>194,192</b>	<b>262,645</b>	<b>257,780</b>
<b>EUROPE—</b>						
Austria-Hungary (b).....	4,518	1,747	4,600	5,050	5,327	4,465
France.....		1,718	2,395	3,199	9,031	5,511
Germany.....	27,881	19,015	20,944	18,739	18,739	21,495
Yugo-Slavia.....		2,684	4,376	5,766	7,536	8,978
Norway.....	3,021	613	6,311	10,598	8,816	10,913
Russia.....	37,858			2,205	2,205	3,600
Spain and Portugal.....	39,683	26,353	36,596	40,234	57,115	60,713
Sweden.....	4,645	1,793	1,465	67	5,180	3,086
Serbia.....	7,053					
<b>Total, Europe.....</b>	<b>124,159</b>	<b>52,923</b>	<b>76,687</b>	<b>85,848</b>	<b>113,949</b>	<b>118,761</b>
<b>ASIA—</b>						
Japan.....	73,283	74,727	59,626	59,663	70,316	69,378
Other Asia.....		593	1,280	1,162	810	1,378
<b>Total Asia.....</b>	<b>73,283</b>	<b>75,320</b>	<b>60,906</b>	<b>60,825</b>	<b>71,126</b>	<b>70,756</b>
<b>AUSTRALASIA.....</b>	<b>49,901</b>	<b>20,327</b>	<b>20,869</b>	<b>13,754</b>	<b>19,995</b>	<b>15,711</b>
<b>AFRICA.....</b>	<b>25,236</b>	<b>33,708</b>	<b>42,501</b>	<b>58,219</b>	<b>80,410</b>	<b>114,700</b>
<b>OTHER COUNTRIES.....</b>	<b>4,188</b>	<b>3,307</b>	<b>3,307</b>	<b>3,307</b>	<b>3,307</b>	<b>4,409</b>
<b>Grand Total.....</b>	<b>1,072,674</b>	<b>1,082,652</b>	<b>600,960</b>	<b>995,045</b>	<b>1,418,163</b>	<b>1,514,017</b>

(\*) So far as possible, these statistics are based on blister copper, referred to countries wherein ore originated.

(a) For Dominion Bureau of Statistics figures on Canada's production of copper, see Table 41.

(b) After 1918, Austria only.

## GOLD

## CANADA

The production of gold from all sources in Canada during the calendar year 1924 was 1,525,382 fine ounces which, at \$20·671834 per fine ounce amounted in value to \$31,532,443.

This marked an increase of 292,041 fine ounces or 23·6 per cent over the previous year and was the greatest production of gold recorded in any one year in the history of Canada; the next greatest output was in 1900 when the Yukon gold production was at its maximum. During that year production reached a total of 1,350,057 fine ounces.

Gold produced in 1924 was derived from (a) alluvial deposits, 55,862 ounces; (b) gold obtained from milling ores, 1,254,737 ounces; (c) gold obtained from Canadian copper and lead smelters, 45,784 ounces and (d) gold estimated as recoverable from various ores and concentrates exported, 168,999 ounces. The corresponding figures for the year 1923 were (a) 80,344 ounces; (b) 981,299 ounces; (c) 34,356 ounces; and (d) 137,342 ounces.

The production of gold by provinces was: Nova Scotia, 1,047 ounces or 0·07 per cent; Quebec 883 ounces or 0·06 per cent; Ontario, 1,241,728 ounces, or 81·40 per cent; Manitoba, 1,180 ounces or 0·08 per cent; British Columbia, 245,719 ounces, or 16·10 per cent; and the Yukon 34,825 ounces or 2·29 per cent. Comparing the production by provinces with the previous year, it is noted that Nova Scotia showed a slight increase caused by the export of arsenic concentrates containing gold; Quebec reported a greater production in the previous year whilst Ontario's production increased by over a quarter of a million ounces due to the increased tonnage handled by many of the gold mines of the Porcupine and Kirkland Lake area. Because of the activity of the Manitoba Metals Corporation there was an increased production in that province. British Columbia also reported more than 45,000 ounces above the previous year's production. The Yukon's production was somewhat lower because of the decreased activities in the placer operations of that district.

## PRODUCTION OF GOLD IN CANADA 1858-1922.

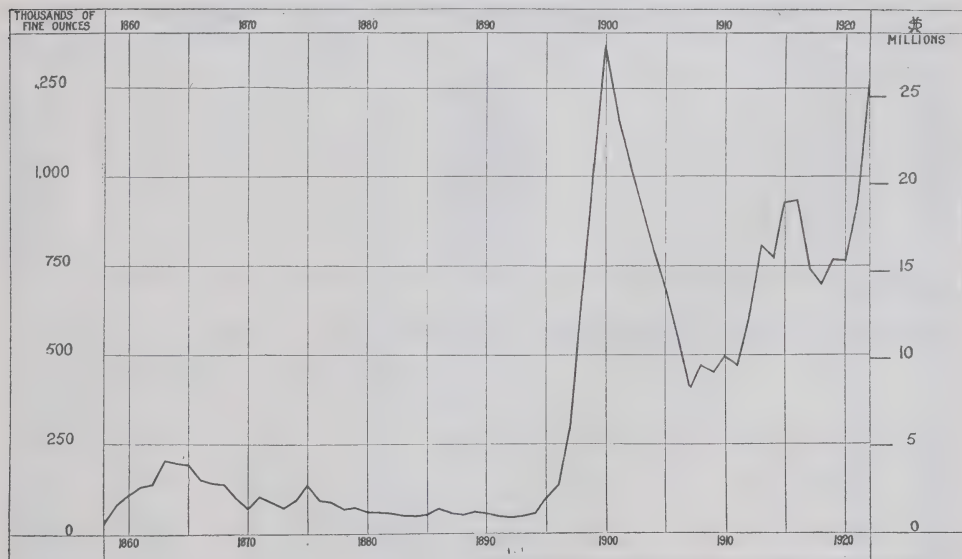


Table 50.—Production of Gold from Canadian Sources, 1858-1924

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1858.....	34,104	705,000	1881.....	63,524	1,313,153	1904.....	796,374	16,462,517
1859.....	78,129	1,615,072	1882.....	60,288	1,246,268	1905.....	684,951	14,159,195
1860.....	107,806	2,228,543	1883.....	53,853	1,113,246	1906.....	556,415	11,502,120
1861.....	128,973	2,666,118	1884.....	51,202	1,058,439	1907.....	405,517	8,382,780
1862.....	135,391	2,798,774	1885.....	55,575	1,148,829	1908.....	476,112	9,842,105
1863.....	202,498	4,186,011	1886.....	70,782	1,463,196	1909.....	453,865	9,382,230
1864.....	199,605	4,126,199	1887.....	57,460	1,187,804	1910.....	493,707	10,205,835
1865.....	192,898	3,987,562	1888.....	53,145	1,098,610	1911.....	473,159	9,781,077
1866.....	152,555	3,153,597	1889.....	62,653	1,295,159	1912.....	611,885	12,648,794
1867.....	145,775	3,013,431	1890.....	55,620	1,149,776	1913.....	802,973	16,598,923
1868.....	134,169	2,773,527	1891.....	45,018	930,614	1914.....	773,178	15,983,007
1869.....	102,720	2,123,405	1892.....	43,905	907,601	1915.....	918,056	18,977,901
1870.....	83,415	1,724,348	1893.....	47,243	976,603	1916.....	930,492	19,234,976
1871.....	105,187	2,174,412	1894.....	54,600	1,128,688	1917.....	738,831	15,272,992
1872.....	90,283	1,866,321	1895.....	100,798	2,083,674	1918.....	699,681	14,463,689
1873.....	74,346	1,536,871	1896.....	133,262	2,754,774	1919.....	766,764	15,850,423
1874.....	97,856	2,022,862	1897.....	291,557	6,027,016	1920.....	765,007	15,814,098
1875.....	130,300	2,693,533	1898.....	666,386	13,775,420	1921.....	926,329	19,148,920
1876.....	97,729	2,020,233	1899.....	1,028,529	21,261,584	1922.....	1,263,364	26,116,050
1877.....	94,304	1,949,444	1900.....	1,350,057	27,908,153	1923.....	1,233,341	25,495,421
1878.....	74,420	1,538,394	1901.....	1,167,216	24,128,503	1924.....	1,525,382	31,532,443
1879.....	76,547	1,582,358	1902.....	1,032,161	21,336,667			
1880.....	63,121	1,304,824	1903.....	911,559	18,843,590			
						Total.....	26,353,907	544,783,702

\*Calculated from the value: one dollar=0.048375 ounces.

**Refined Metal**—There were two refineries producing fine gold in Canada in 1924, namely, the Royal Mint, Ottawa, and the Consolidated Mining and Smelting Company of Canada, Limited at Tadanae near Trail, B.C. From all ores treated in 1924, the latter company produced 23,412 fine ounces. This gold was recovered principally from the gold in copper ores but some was also recovered from silver-lead and dry ores. Small quantities of imported ores were also treated by this company.

Gold refined at the Royal Mint at Ottawa from the gold ores of Ontario, British Columbia and the Yukon placers amounted to 111,193 fine ounces. Of this a small amount was recovered from scrap and crude gold from various sources. The total production of gold refined in Canada during 1924 was, therefore, 134,605 fine ounces.

Table 51.—Refined Gold Produced at Trail, B.C., 1904-1924\*

Year	Fine oz.	Year	Fine oz.
1904.....	4,336	1914.....	11,088
1905.....	8,602	1915.....	17,813
1906.....	9,993	1916.....	23,608
1907.....	10,395	1917.....	49,661
1908.....	15,346	1918.....	61,212
1909.....	18,241	1919.....	47,283
1910.....	13,298	1920.....	42,636
1911.....	15,270	1921.....	56,297
1912.....	12,118	1922.....	18,940
1913.....	11,977	1923.....	11,113
		1924.....	23,412

\*Includes some gold derived from imported ores and from occasional shipments from Ontario, Manitoba, Alberta, and the Yukon.

Table 52.—Receipts of Gold Bullion at the Royal Mint, Ottawa, Ont., 1908-1924

Year	From Canadian Sources		From Foreign Countries	
	Oz. gross	Value gold content	Oz. gross	Value gold content
		\$		\$
1908.....	219-19	3,823.03		
1909.....	5,741-43	94,864.81	38-25	673.98
1910.....	65,009-35	1,079,223.42		
1911.....	89,463-11	1,469,087.43	511-24	9,128.55
1912.....	104,825-29	1,676,371.78	742-79	12,451.33
1913.....	212,076-41	3,363,870.30	633-23	11,609.84
1914.....	29,762-24	471,042.90	4,750-19	98,062.84
1915.....	89,231-47	1,402,605.19	871,693-79	15,838,222.01
1916.....	49,195-39	780,074.19	6,687,758-41	121,513,083.93
1917.....	55,779-96	840,265.33	8,196,151-04	148,919,793.48
1918.....	302,785-96	4,982,743.81	3,728,224-05	67,739,887.68
1919.....	654,906-28	10,865,770.57	8,917-02	134,756.38
1920.....	724,083-34	11,530,413.82		
1921.....	1,054,277-01	16,914,211.58	53-00	826.87
1922.....	1,376,863-35	22,469,160.42	345-22	5,387.93
1923.....	779,466-92	12,682,163.78	295-53	4,935.16
1924.....	169,239-28	2,297,170-32	90-53	1,395-41

Table 53.—Receipts at Dominion Assay Office, Vancouver, B.C., 1908-1924

Year	Weight before melting	Weight after melting	Net value	Year	Weight before melting	Weight after melting	Net value
	Ounces	Ounces	\$		Ounces	Ounces	\$
1908 (a).....	90,175.48	89,117.76	1,478,894.00	1916.....	180,292.83	175,393.10	2,828,239.65
1909.....	48,478.58	47,576.27	789,267.94	1917.....	191,626.04	187,884.48	3,257,220.71
1910.....	46,064.31	45,228.92	746,101.92	1918.....	241,762.77	238,245.07	4,099,595.80
1911.....	39,784.70	39,069.31	647,416.38	1919.....	209,026.14	205,947.57	3,547,524.93
1912.....	59,068.82	57,951.98	974,077.14	1920.....	150,869.17	147,718.25	2,499,174.41
1913 (b).....	111,470.94	109,920.49	1,448,625.37	1921.....	163,070.56	160,803.48	2,834,499.61
1914.....	166,148.83	163,523.61	2,029,251.31	1922.....	129,891.63	125,758.41	2,105,989.64
1915.....	183,924.49	179,751.68	2,736,802.31	1923.....	129,043.63	124,546.48	2,051,369.65
				1924.....	114,041.96	107,569.15	1,850,373.74

(a) For 9 months only. (b) The removal of the assay charge in January 1913, accounts for the large increase.

## NOVA SCOTIA

Nova Scotia's gold production has been derived almost entirely from quartz ores but gold also occurs in deposits of arsenical pyrites which are sometimes mined for the recovery of arsenic and gold. Production from all sources in 1924 amounted to 1,047 fine ounces including 595 ounces from gold milling ores and 452 ounces, the estimated recoverable gold from ores exported. Gold mining in Nova Scotia reached its peak in 1902 when the output amounted to 30,348 fine ounces. Due partly to the exhaustion of the mines and partly to the high cost of supplies and labour, production has steadily declined in recent years. During 1924, as reported in the *Canadian Mining Journal*, January 2, 1925, shipments of arsenic concentrates from Nova Scotia amounted to 1,106.54 tons containing 24.6 per cent arsenic, and 0.43 ounces of gold per ton. This was all material from old dumps in the gold mining district.

Table 54.—Production of Gold from Nova Scotia Ores, 1862-1924

Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$
1862.....	6,863	141,871	1894.....	18,834	389,338
1863.....	13,180	272,448	1895.....	21,919	453,119
1864.....	18,883	390,349	1896.....	23,876	493,568
1865.....	24,011	496,357	1897.....	27,195	562,165
1866.....	23,776	491,491	1898.....	26,054	538,590
1867.....	25,763	532,563	1899.....	29,876	617,604
1868.....	19,377	400,555	1900.....	28,955	598,553
1869.....	16,855	348,427	1901.....	26,459	546,963
1870.....	18,740	387,392	1902.....	30,348	627,357
1871.....	18,139	374,972	1903.....	25,533	527,806
1872.....	12,352	255,349	1904.....	10,362	214,209
1873.....	11,180	231,122	1905.....	13,707	283,353
1874.....	8,623	178,244	1906.....	12,223	252,676
1875.....	10,576	218,629	1907.....	13,675	282,686
1876.....	11,300	233,585	1908.....	11,842	244,799
1877.....	15,925	329,205	1909.....	10,193	210,711
1878.....	11,864	245,253	1910.....	7,928	163,891
1879.....	12,980	268,328	1911.....	7,781	160,854
1880.....	12,472	257,823	1912.....	4,385	90,638
1881.....	10,147	209,755	1913.....	2,174	44,935
1882.....	13,307	275,090	1914.....	2,904	60,031
1883.....	14,571	301,207	1915.....	6,636	137,180
1884.....	15,168	313,554	1916.....	4,562	94,305
1885.....	20,945	432,971	1917.....	2,210	45,685
1886.....	22,038	455,564	1918.....	1,176	24,310
1887.....	20,009	413,631	1919.....	850	17,571
1888.....	21,137	436,939	1920.....	690	14,263
1889.....	24,673	510,029	1921.....	439	9,075
1890.....	22,978	474,990	1922.....	1,042	21,540
1891.....	21,841	451,503	1923.....	655	13,540
1892.....	18,865	389,965	1924.....	1,047	21,643
1893.....	18,436	381,095			
			<b>Total.....</b>	<b>912,504</b>	<b>18,863,214</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## QUEBEC

Gold produced from ores mined in the province of Quebec during 1924 totalled 883 fine ounces. This was the amount of recoverable gold in pyritic ores and lead ores exported to the United States for treatment. Present activities in the new Rouyn area of northern Quebec indicate that this province will soon have a steadily increasing production of gold to record. To the end of the year 1924, Quebec was credited with having produced 28,384 fine ounces of gold valued at \$586,712.

Table 55.—Production of Gold from Quebec Ores, 1877-1924

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1877.....	583	12,057	1894.....	1,412	29,196	1911.....	613	12,672
1878.....	868	17,937	1895.....	62	1,281	1912.....	642	13,270
1879.....	1,160	23,972	1896.....	145	3,000	1913.....	701	14,491
1880.....	1,605	33,174	1897.....	44	900	1914.....	1,292	26,708
1881.....	2,741	56,661	1898.....	295	6,089	1915.....	1,099	22,720
1882.....	827	17,093	1899.....	238	4,916	1916.....	1,034	21,375
1883.....	860	17,787	1900.....	.....	.....	1917.....	1,511	31,235
1884.....	422	8,720	1901.....	145	3,000	1918.....	1,939	40,083
1885.....	103	2,120	1902.....	391	8,073	1919.....	1,470	30,388
1886.....	193	3,981	1903.....	180	3,712	1920.....	955	19,742
1887.....	78	1,604	1904.....	140	2,900	1921.....	635	13,127
1888.....	181	3,740	1905.....	191	3,940	1922.....	.....	.....
1889.....	58	1,207	1906.....	165	3,412	1923.....	667	13,788
1890.....	65	1,350	1907.....	.....	.....	1924.....	883	18,253
1891.....	87	1,800	1908.....	.....	.....			
1892.....	628	12,987	1909.....	193	3,990			
1893.....	759	15,696	1910.....	124	2,565	<b>Total.....</b>	<b>28,384</b>	<b>586,712</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## ONTARIO

Ontario's gold production in 1924 exceeded the total for any previous year. For the second time, production rose above a million ounces, the other year being 1922. In 1923, the output was slightly less. From present indications there is little doubt that the record established in 1924 will be exceeded in the years to come. Since 1914, Ontario has become by far the largest producer of gold among the provinces of the Dominion; this remarkable increase was brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The falling-off in production during 1917-1918 was due to the abnormal conditions created by the war; high costs both of materials and labour restricted development programs; lack of adequate transportation facilities at reasonable rates and other factors hampered production. Gold was paid for in New York funds, because of government limitations on export, and the exchange premium received by the producers proved an important feature of gold-marketing, from the close of the war until the end of 1921. The gradual recovery in the value of the Canadian dollar in the United States exchanges has greatly reduced the premiums paid to the Canadian gold mine operators. In 1920, the United States dollar had an average exchange value in Canadian funds of \$1.12270, the average exchange value in 1923 was \$1.0197, and in 1924 it stood at \$1.0131.

Table 56.—Production of Gold from Ontario Ores, 1887-1924

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1887.....	327	6,760	1900.....	14,391	297,495	1913.....	219,801	4,543,690
1888.....	.....	.....	1901.....	11,844	244,837	1914.....	268,264	5,545,509
1889.....	.....	.....	1902.....	11,118	229,828	1915.....	406,577	8,404,693
1890.....	.....	.....	1903.....	9,096	188,036	1916.....	492,481	10,180,485
1891.....	97	2,000	1904.....	1,935	40,000	1917.....	423,261	8,749,581
1892.....	344	7,118	1905.....	4,402	91,000	1918.....	411,976	8,516,299
1893.....	708	14,637	1906.....	3,202	66,193	1919.....	505,739	10,454,553
1894.....	1,917	39,624	1907.....	3,212	66,398	1920.....	564,995	11,679,483
1895.....	3,015	62,320	1908.....	3,212	66,398	1921.....	708,213	14,640,062
1896.....	5,563	115,000	1909.....	1,569	32,425	1922.....	1,000,340	20,678,862
1897.....	9,157	189,294	1910.....	3,089	63,849	1923.....	971,704	20,086,904
1898.....	12,863	265,889	1911.....	2,062	42,625	1924.....	1,241,728	25,668,795
1899.....	20,394	421,591	1912.....	86,523	1,788,596	<b>Total.....</b>	<b>7,425,119</b>	<b>153,490,829</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## MANITOBA

Manitoba mines produced 1,180 fine ounces of gold during 1924, having a value of \$24,393; there was a small production in 1923. During 1917 and 1918 shipments of gold-bearing copper ores were made from The Pas district in northern Manitoba to Trail, but because of the drop in the price of copper, and also because of inadequate transportation facilities in the copper-mining district of the province, there has been no production of gold from this source in recent years, until 1924. There is much of interest in the gold area stretching eastward from Lake Winnipeg along Wanipigou and Manigotagan rivers to the Ontario boundary. A considerable amount of prospecting has been done in this district and the indications are that Manitoba will produce gold in quantity in the near future.

Table 57.—Production of Gold from Manitoba Ores 1917-1924

Year	Fine ounces*	Value	Year	Fine ounces*	Value
1917.....	440	\$ 9,095	1922.....	156	\$ 3,225
1918.....	1,926	39,814	1923.....	31	641
1919.....	724	14,966	1924.....	1,180	24,393
1920.....	781	16,145			
1921.....	207	4,279	<b>Total.....</b>	<b>5,445</b>	<b>112,558</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## SASKATCHEWAN AND ALBERTA

No production of gold was reported from these two provinces in 1924. Occasionally, small quantities of gold have been recovered by prospectors in Alberta from the gravels of the Saskatchewan River. To date, the grand total of gold produced by Alberta has amounted to 15,109 fine ounces valued at \$312,333.

Table 58.—Production of Gold from Alberta, 1887-1924

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
1887.....	102	\$ 2,100	1900.....	242	\$ 5,000	1913.....		
1888.....	58	1,200	1901.....	726	15,000	1914.....	48	992
1889.....	967	20,000	1902.....	484	10,000	1915.....	195	4,026
1890.....	193	4,000	1903.....	48	1,000	1916.....	82	1,695
1891.....	266	5,500	1904.....	24	500	1917.....		
1892.....	508	10,506	1905.....	121	2,500	1918.....	27	558
1893.....	466	9,640	1906.....	39	800	1919.....	24	500
1894.....	726	15,000	1907.....	33	675	1920.....		
1895.....	2,419	50,000	1908.....	50	1,037	1921.....	49	1,013
1896.....	2,661	55,000	1909.....	25	525	1922.....		
1897.....	2,419	50,000	1910.....	89	1,850	1923.....		
1898.....	1,209	25,000	1911.....	10	207	1924.....		
1899.....	726	15,000	1912.....	73	1,509			
			<b>Total.....</b>				<b>15,109</b>	<b>312,333</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## BRITISH COLUMBIA

The production of gold in British Columbia during 1924 totalled 245,719 fine ounces valued at \$5,079,462 as against 200,140 fine ounces valued at \$4,137,261 in 1923. This was an increase of 22.7 per cent and was due largely to the fact that the Trail smelter operated its copper department for part of the year and also because of the increased quantity of gold ores exported to foreign smelters for treatment. Approximately one thousand ounces more gold was obtained from placer workings. Production by the Granby smelter was not as large as in 1922. In the old Cariboo fields there was considerable activity late in 1924. A new dredge was built and sent in to that district and it was anticipated that the gold production from placer diggings would show an upward trend once again. Production in 1924 included (a) alluvial gold 21,037 fine ounces or 8.56 per cent of the total for the province; (b) bullion from milling ores, 15,361 fine ounces or 6.25 per cent; (c) smelter recoveries 41,657 fine ounces or 16.95 per cent; and (d) the estimated recoveries from ores and concentrates exported 167,664 fine ounces or 68.24 per cent. The corresponding quantities for 1923 were (a) 20,320 fine ounces or 10.2 per cent;

(b) 11,036 fine ounces or 5.6 per cent; (c) 33,380 fine ounces or 16.6 per cent and (d) 135,404 fine ounces or 67.6 per cent.

The quantities shown for alluvial gold are as published by the Provincial Mineralogist. Data on gold from milling ores, smelter recoveries and ores exported have been compiled from reports received by the Bureau from smelter and mine operators. In the statistics reported by the Provincial Bureau of Mines for 1924 the quantity given for gold production is based on the metal content of ores shipped, and is somewhat higher than the records of smelter recoveries used by Dominion Bureau of Statistics.

**Table 59—Production of Gold from British Columbia Ores, 1858-1924**

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1858.....	34,104	705,000	1881.....	50,636	1,046,737	1903.....	284,108	5,873,036
1859.....	78,129	1,615,072	1882.....	46,154	954,085	1904.....	275,975	5,704,908
1860.....	107,806	2,228,543	1883.....	38,422	794,252	1905.....	285,529	5,902,402
1861.....	128,973	2,666,118	1884.....	35,612	736,165	1906.....	269,886	5,579,039
1862.....	128,528	2,656,903	1885.....	34,527	713,738	1907.....	236,216	4,883,020
1863.....	189,318	3,913,563	1886.....	43,714	903,651	1908.....	286,858	5,929,880
1864.....	180,722	3,735,850	1887.....	33,558	693,709	1909.....	250,320	5,174,579
1865.....	168,887	3,491,205	1888.....	29,834	616,731	1910.....	261,386	5,403,318
1866.....	128,779	2,662,106	1889.....	28,489	588,923	1911.....	238,496	4,930,145
1867.....	120,012	2,480,868	1890.....	23,918	494,436	1912.....	251,815	5,205,485
1868.....	114,792	2,372,972	1891.....	20,792	429,811	1913.....	297,459	6,149,027
1869.....	85,865	1,774,978	1892.....	19,327	399,525	1914.....	262,730	5,224,393
1870.....	64,675	1,336,956	1893.....	18,360	379,535	1915.....	273,376	5,651,184
1871.....	87,048	1,799,440	1894.....	25,664	530,530	1916.....	199,633	4,540,216
1872.....	77,931	1,610,972	1895.....	61,289	1,266,954	1917.....	133,742	2,764,693
1873.....	63,166	1,305,749	1896.....	86,504	1,788,206	1918.....	180,163	3,724,300
1874.....	89,233	1,844,618	1897.....	131,805	2,724,657	1919.....	167,252	3,457,406
1875.....	119,724	2,474,904	1898.....	142,215	2,939,852	1920.....	124,808	2,580,010
1876.....	86,429	1,786,648	1899.....	203,295	4,202,473	1921.....	150,792	3,117,147
1877.....	77,796	1,608,182	1900.....	228,916	4,732,105	1922.....	207,370	4,286,718
1878.....	61,688	1,275,204	1901.....	257,292	5,318,703	1923.....	200,140	4,137,261
1879.....	62,407	1,290,058	1902.....	288,383	5,961,409	1924.....	245,719	5,079,462
1880.....	49,044	1,013,827						
<b>Total.....</b>							<b>9,247,535</b>	<b>191,163,552</b>

\* Calculated from the value: one dollar=0.048375 ounces.

**Table 60.—Production of Gold in British Columbia by Districts, 1923 and 1924**

(From *Annual Report of the Minister of Mines for British Columbia.*)

District	1923				1924			
	Gold Placer		Gold Lode		Gold Placer		Gold Lode	
	Ounces	Value	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$		\$
Cariboo:—								
Cariboo and Quesnel.....	11,128	230,000	42	868	12,000	240,000		
Omineca.....	435	9,000			500	10,000	329	6,800
Cassiar:—								
Atlin, Liard and Stikine.....	7,570	156,500	1	21	7,516	150,325	5	103
Skeena, etc.....			155,030	3,204,469			180,458	3,730,067
East Kootenay:—								
Fort Steele.....	100	2,000			260	5,200		
Windermere and Golden.....								
West Kootenay:—								
Ainsworth.....			15	310			24	496
Nelson.....			319	6,594			98	2,026
Slocan and Slocan City.....			361	7,463			365	7,545
Trail Creek.....			6,983	144,339			42,620	880,956
Revelstoke, etc.....	50	1,000			50	1,000		
Yale:—								
Grand Forks, Greenwood and Osoyoos.....	240	5,000	10,934	226,006			19,589	405,150
Similkameen, Nicola and Vernon.....	240	5,000	2	41	200	4,000	2	41
Yale, Ashcroft and Kamloops.....	145	3,000	562	11,616	100	2,000	136	2,811
Lillooet:—								
Lillooet.....	387	8,000			386	7,725		
Southern Coast:—								
Vancouver Island.....	25	500	120	2,480	25	500		
Mainland.....			4,876	100,787			4,090	84,540
<b>Total.....</b>	<b>20,320</b>	<b>420,000</b>	<b>179,245</b>	<b>3,704,994</b>	<b>21,037</b>	<b>420,750</b>	<b>247,716</b>	<b>5,120,535</b>

## YUKON

Yukon's gold production in 1924, derived from alluvial sands of the Dawson and White Horse Districts showed a considerably reduced total from the figures for 1923. The output for 1924 amounted to 34,825 fine ounces valued at \$719,897 as against 60,144 fine ounces valued at \$1,243,287 in 1923. Royalty was paid on 43,530.79 crude ounces which included 34,825 fine ounces of gold valued at \$719,897 and 7,853 fine ounces of silver valued at \$5,244, the total value being \$725,141. For 1923 the corresponding figures were 74,867.81 crude ounces containing 60,024 fine ounces of gold valued at \$1,240,806 and 13,476 fine ounces of silver valued at \$8,742, a total value of \$1,249,548.

The following table shows statistics of gold produced in the Yukon during the past 39 years. Between the years 1896 and 1906 the figures were based upon receipts of gold at United States mints and receiving offices, credited to the Canadian Yukon.

Since 1902 a royalty of two and one-half per cent of all gold produced has been collected by the Canadian Government which places a nominal value of \$15 per crude ounce recovered. The statistics shown for these years are based on the returns supplied by the *Mining Lands and Yukon Branch* of the Department of the Interior, in which the fine gold is estimated as 80 per cent of all crude gold, fine silver as 12 per cent, and the remaining 8 per cent is recorded as worthless base metals.

The Vancouver Assay Office, which is operated by the Department of Mines, Ottawa, receives and melts a considerable portion of the placer gold from the Yukon. During 1924 there was deposited from this Territory 44,365.96 ounces valued, after all charges had been deducted, at \$717,156 or \$16.17 per ounce as against 73,360.82 ounces valued at \$1,201,133 or \$16.37 per ounce in 1923.

Table 61.—Production of Gold from the Yukon, 1885-1924

Year	Fine ounces (*)	Value	Year	Fine ounces (*)	Value	Year	Fine ounces (*)	Value
		\$			\$			\$
1885\			1899.....	774,000	16,000,000	1913.....	282,838	5,846,780
1886.....	4,837	100,000	1900.....	1,077,553	22,275,000	1914.....	247,940	5,125,374
1887.....	3,386	70,000	1901.....	870,750	18,000,000	1915.....	230,173	4,758,098
1888.....	1,935	40,000	1902.....	701,437	14,500,000	1916.....	212,700	4,396,900
1889.....	8,466	175,000	1903.....	592,594	12,250,000	1917.....	177,667	3,672,703
1890.....	8,466	175,000	1904.....	507,938	10,500,000	1918.....	102,474	2,118,325
1891.....	1,953	40,000	1905.....	381,001	7,876,000	1919.....	90,705	1,875,039
1892.....	4,233	87,500	1906.....	270,900	5,600,000	1920.....	72,778	1,504,455
1893.....	8,514	176,000	1907.....	152,381	3,150,000	1921.....	65,994	1,364,217
1894.....	6,047	125,000	1908.....	174,150	3,600,000	1922.....	54,456	1,125,705
1895.....	12,094	250,000	1909.....	191,565	3,960,000	1923.....	60,144	1,243,287
1896.....	14,513	300,000	1910(a).....	221,091	4,570,362	1924.....	34,825	719,897
1897.....	120,937	2,500,000	1911.....	224,197	4,634,574			
1898.....	483,750	10,000,000	1912.....	268,447	5,549,296			
						<b>Total.....</b>	<b>8,719,829</b>	<b>180,254,512</b>

(\*) Calculated from the value: one dollar=0.048375 ounces.

(a) Including a small production from lode mines, from 1910 to 1923 inclusive.

Table 62—Receipts from the Yukon, at the Dominion Government Assay Office, Vancouver, B.C., 1908-1924

Year	Weight before melting	Net value	Average value	Year	Weight before melting	Net value	Average value
	Ounces	\$	\$		Ounces	\$	\$
1908 (a).....	60,132.00	1,000,296	16.63	1916.....	95,005.82	1,525,724	16.06
1909.....	5,003.12	83,871	16.75	1917.....	79,532.35	1,262,207	15.87
1910.....	3,594.87	62,094	17.27	1918.....	121,310.37	1,921,198	15.84
1911.....	2,073.61	34,944	16.83	1919.....	111,138.65	1,813,883	16.32
1912.....	2,211.88	36,481	16.41	1920.....	74,456.01	1,206,579	16.21
1913 (b).....	15,235.29	247,189	16.22	1921.....	82,219.92	1,340,225	16.30
1914.....	56,564.83	915,914	16.21	1922.....	69,161.19	1,126,702	16.29
1915.....	87,040.87	1,418,497	16.28	1923.....	73,360.82	1,201,133	16.37
				1924.....	44,365.96	717,156	16.17

(a) For nine months only.

(b) The removal in 1913 of the assay charge accounts for the great increase.

**Table 63.—Production of Crude Gold in the Yukon by Months, 1922, 1923 and 1924**  
(Gross weight of dust, nuggets, and bullion in ounces)

Month	1922	1923	1924
January.....	18-90	969-26	1,381-51
February.....	815-64	1,040-36	52-07
March.....	295-52	2-39	1,468-51
April.....	82-30		100-10
May.....			129-66
June.....	14,360-08	10,352-94	8,651-62
July.....	10,288-07	9,176-99	6,831-51
August.....	8,062-47	9,953-42	6,225-10
September.....	15,635-29	11,924-54	4,971-71
October.....	11,697-89	24,881-87	9,168-36
November.....	4,613-04	4,794-17	3,080-63
December.....	2,092-53	1,771-87	1,470-01
<b>Total.....</b>	<b>67,961-73</b>	<b>74,867-81</b>	<b>43,530-79</b>

From 1898 to March 31, 1925, a royalty to the extent of \$4,878,959.52 was collected on the gold production of this district. The yearly amounts collected, as well as the annual production of gold as ascertained by the Department of the Interior, are shown below. The difference between these figures and those shown in the table of annual production, which are based on mint receipts of Yukon gold is probably due to three factors: (1) the fixing of the value of the gold for royalty purposes at \$15 per ounce, (2) the probability that, in the earlier years of royalty collection, considerable quantities of gold dust left the camps unrecorded and escaped royalty payments, and (3) the fact that in the last few years there has been a small production from lode mines.

**Table 64.—Gold Production in the Yukon and the Royalty Collected, 1898-1925**

(Supplied by Controller H. H. Rowatt, of the Mining Lands Branch of the Department of the Interior.)

Fiscal year	Total gold production	Total exemption	Royalty collected on	Royalty paid
	\$	\$	\$	\$
Ending June, 1898.....	3,072,773	339,845	2,732,928	273,292.82
Ending June, 1899.....	7,582,283	1,699,657	5,882,626	588,262.37
Ending June, 1900.....	9,809,464	2,501,744	7,307,720	730,771.99
Ending June, 1901.....	9,162,082	1,927,666	7,234,416	592,660.98
Ending June, 1902.....	9,566,340	1,199,114	8,367,226	331,436.79
Ending June, 1903.....	12,113,015		12,113,015	302,893.48
Ending June, 1904.....	10,790,663		10,790,663	272,217.96
Ending June, 1905.....	8,222,054		8,222,054	206,760.87
Ending June, 1906.....	6,540,007		6,540,007	163,963.25
Ending March, 1907.....	3,304,791		3,304,791	82,622.42
Ending March, 1908.....	2,820,162		2,820,162	70,504.65
Ending March, 1909.....	3,260,282		3,260,282	81,507.07
Ending March, 1910.....	3,594,251		3,594,251	89,844.10
Ending March, 1911.....	4,126,728		4,126,728	103,168.19
Ending March, 1912.....	4,024,237		4,024,237	100,606.29
Ending March, 1913.....	5,018,412		5,018,412	125,460.52
Ending March, 1914.....	5,301,508		5,301,508	132,537.69
Ending March, 1915.....	4,649,634		4,649,634	116,241.04
Ending March, 1916.....	4,458,278		4,458,278	111,457.19
Ending March, 1917.....	3,960,207		3,960,207	99,007.92
Ending March, 1918.....	3,266,019		3,266,019	81,650.55
Ending March, 1919.....	1,947,082		1,947,082	48,677.07
Ending March, 1920.....	1,660,450		1,660,450	41,501.12
Ending March, 1921.....	1,246,486		1,246,486	31,273.76
Ending March, 1922.....	1,230,987		1,230,987	30,774.68
Ending March, 1923.....	1,032,762		1,032,762	25,819.04
Ending March, 1924.....	1,136,368		1,136,368	28,409.23
Ending March, 1925.....	625,459		625,459	15,636.48
<b>Total.....</b>	<b>133,522,784</b>		<b>125,854,758</b>	<b>4,878,959.52</b>

**Table 65.—Imports into Canada and Exports of Gold, 1922, 1923 and 1924**

	1922	1923	1924
	\$	\$	\$
<b>IMPORTS—</b>			
Gold—			
Fringe.....	38,939	42,283	40,468
Manufactures of Gold and silver—			
Leaf.....	63,276	81,252	69,495
Sweepings.....	5,471	4,849	5,508
Manufactures, n.o.p.....	89,684	125,582	142,008
Electroplated ware.....	442,593	509,131	604,500
<b>EXPORTS—</b>			
Gold-bearing quartz, dust, nuggets and bullion obtained direct from mining operations.....	3,953,938	12,541,745	28,358,449

Table 66.—World's Production of Gold, (a) 1913, 1920-1924

(From the Year Book of the American Bureau of Metal Statistics, 1924)

(Fine ounces)

	1913	1920	1921	1922	1923	1924
<b>NORTH AMERICA—</b>						
United States.....	4,299,784	2,476,166	2,422,006	2,363,075	2,502,632	2,511,243
Canada.....	802,973	765,007	926,329	1,263,364	1,233,341	1,516,360
Mexico.....	829,783	735,078	684,634	748,291	776,808	792,401
<b>Total North America.....</b>	<b>5,932,540</b>	<b>3,976,251</b>	<b>4,032,969</b>	<b>4,374,730</b>	<b>4,512,781</b>	<b>4,820,004</b>
<b>Central America and West Indies.....</b>	<b>131,661</b>	<b>145,125</b>	<b>120,937</b>	<b>120,937</b>	<b>96,750</b>	<b>*100,000</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	8,467	242	290	4.7	407	.....
Chili.....	43,538	43,538	45,139	79,828	64,397	.....
Brazil.....	109,072	125,775	134,482	146,668	144,675	.....
Colombia.....	143,757	280,575	290,250	275,737	275,738	.....
Ecuador.....	19,665	36,281	36,259	42,456	42,456	.....
Peru.....	23,813	62,757	77,385	81,436	120,372	.....
Guiana—British.....	65,475	9,675	12,828	10,876	6,173	.....
Dutch.....	22,757	12,506	11,285	11,992	12,731	.....
French.....	147,571	43,538	48,375	48,772	44,624	.....
Venezuela.....	21,517	18,839	30,253	17,361	17,361	.....
Other countries.....	1,572	4,858	3,967	3,967	4,208	.....
<b>Total South America.....</b>	<b>563,666</b>	<b>638,584</b>	<b>690,513</b>	<b>719,500</b>	<b>733,142</b>	<b>*750,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	105,425	.....	161	546	739	.....
Czecho-Slovakia.....	.....	8,761	11,413	8,294	4,82	.....
France.....	102,912	900	8,906	16,493	16,943	.....
Great Britain.....	864	32	.....	.....	.....	.....
Roumania.....	.....	.....	41,409	47,984	48,225	.....
Russia and Siberia.....	1,282,313	57,225	43,177	146,700	250,673	.....
Other countries.....	24,290	9,148	8,231	9,744	10,19	.....
<b>Total Europe.....</b>	<b>1,515,804</b>	<b>76,066</b>	<b>113,297</b>	<b>224,761</b>	<b>331,531</b>	<b>*410,000</b>
<b>AUSTRALASIA—</b>						
New South Wales.....	149,657	48,907	51,173	25,222	18,833	18,685
Queensland.....	265,735	115,230	40,376	80,584	88,776	95,703
South Australia.....	6,556	1,697	2,660	1,000	950	787
Victoria.....	434,932	168,979	104,512	106,872	95,403	67,167
West Australia.....	1,314,043	617,842	553,731	538,245	504,511	485,118
New Zealand.....	343,595	124,375	135,720	144,117	155,000	*150,000
Tasmania.....	33,400	6,246	5,340	3,431	3,684	3,450
Other countries.....	21,393	12,502	9,779	12,260	12,289	*12,000
<b>Total Australasia.....</b>	<b>2,569,311</b>	<b>1,095,778</b>	<b>903,291</b>	<b>911,731</b>	<b>879,396</b>	<b>832,910</b>
<b>ASIA—</b>						
British India.....	589,109	499,068	432,723	438,015	422,307	433,750
China.....	176,999	125,000	100,000	100,000	100,000	*100,000
Chosen (Korea).....	173,306	76,000	130,893	127,892	121,433	*122,000
British East Indies.....	65,402	29,025	24,188	29,025	29,025	*29,000
Dutch East Indies.....	163,852	90,920	94,168	104,295	110,885	*100,000
Formosa.....	39,406	13,500	28,455	21,958	21,958	*22,000
Japan.....	174,846	248,181	237,106	241,993	255,460	*250,000
Other countries.....	24,596	29,366	30,637	20,924	16,779	*20,000
<b>Total Asia.....</b>	<b>1,407,516</b>	<b>1,111,060</b>	<b>1,078,170</b>	<b>1,084,102</b>	<b>1,077,847</b>	<b>1,076,750</b>
<b>AFRICA—</b>						
Belgian Congo.....	44,334	96,804	65,715	68,351	91,306	*91,300
Madagascar.....	60,769	16,686	14,660	8,582	16,139	*16,000
Rhodesia.....	690,541	553,067	586,908	655,296	649,08	639,000
British West Africa.....	384,836	230,948	203,606	213,395	200,565	*200,500
Transvaal, Cape Colony and Natal.....	8,798,713	8,158,455	8,128,722	7,009,858	9,149,073	9,597,634
Other countries.....	45,623	26,905	44,984	43,587	48,860	*50,000
<b>Total Africa.....</b>	<b>10,024,816</b>	<b>9,032,865</b>	<b>9,044,595</b>	<b>8,009,069</b>	<b>10,155,025</b>	<b>10,584,434</b>
<b>Grand Total.....</b>	<b>22,145,314</b>	<b>16,125,729</b>	<b>15,983,772</b>	<b>15,444,830</b>	<b>17,786,472</b>	<b>18,574,098</b>

(a) 1913-1922, as reported by the Director of the Mint, with some changes. 1924, as compiled by American Bureau of Metal Statistics, conjectural figures (\*) based on the 1923 outputs being inserted where necessary. Production of the Philippine Islands is included with the United States.

## IRON ORE

## CANADA

Shipments of iron ore totalling 1,480 tons were made from Canadian mines during 1924 which had a value of \$3,936, as compared with 30,759 tons valued at \$114,944 shipped during 1923. This production for 1924 included 1,408 tons of ilmenite valued at \$3,771 which was exported from Quebec, 44 tons of iron briquette screenings shipped from Moose Mountain, Ltd., in Ontario to a Canadian steel company, and 28 tons of magnetite shipped to a Vancouver firm from Vananda Island, B.C.

Pig iron derived from Canadian ores smelted in Canada totalled 3,710 short tons which, valued at \$25 per ton amounted in value to \$92,750. The 1923 production was 20,739 short tons valued at \$432,298.

Nova Scotia did not produce any iron ore, but during the year the British Empire Steel Corporation brought in from their mines at Wabana, Newfoundland, 174,602 tons valued at \$371,622. This company also exported to Europe 919,968 tons valued at \$2,034,113, making a total for the year of 1,094,570 tons, valued at \$2,405,735. Shipments from Newfoundland in 1923 amounted to 808,236 tons valued at \$1,826,129, of which 451,483 tons worth \$1,017,071 were shipped to Nova Scotia and the balance to Europe.

Table 67.—Shipments of Iron Ore from Canadian Mines, by Provinces, 1886-1924

(Short tons)

Year	Nova Scotia	New Brunswick	Quebec	Ontario	British Columbia	Canada
1886	44,388			16,032	3,941	64,361
1887	43,532		13,404	16,598	2,796	76,330
1888	42,611		10,710	16,894	8,372	78,587
1889	54,161		14,533		15,487	84,181
1890	49,206		22,305	5,000		76,511
1891	53,649		14,380		950	68,979
1892	78,258		22,690		2,300	103,248
1893	102,201		22,076		1,325	125,602
1894	89,379		19,492		1,120	109,991
1895	83,792		17,783		1,222	102,797
1896	58,810		17,630	15,270	196	91,906
1897	23,400		22,436	2,770	2,099	50,705
1898	19,079		17,873	21,111	280	58,343
1899	28,000		19,420	25,126	2,071	74,617
1900	18,940		19,000	82,950	1,110	122,000
1901	18,619		15,489	272,538	7,000	313,646
1902	16,172		18,524	359,288	10,019	404,003
1903	40,335		12,035	209,634	2,290	264,294
1904	61,293		16,152	141,601		219,046
1905	84,952		12,681	193,464		291,097
1906	97,820		9,933	141,078		248,831
1907	89,839		12,748	207,769	2,500	312,856
1908	11,802		10,108	216,177		238,082
1909			4,150	263,893		268,043
1910	18,134	5,336	4,503	231,445		259,418
1911	22	31,120	3,616	175,586		210,344
1912	30,857	71,520	1,185	112,321		215,883
1913	20,436	86,416	5,102	195,680		307,634
1914		4,775		240,079		244,854
1915		3,683		394,429		398,112
1916			3,209	271,967		275,176
1917			17,150	198,152		215,302
1918	130	8,159	201,119	2,200		211,608
1919			321	195,649	1,200	197,170
1920			960	126,912	1,200	129,072
1921				58,499	1,010	59,509
1922			526	16,190	1,255	17,971
1923			69	30,447	243	30,759
1924			1,408	44	28	1,480
<b>Total</b>	<b>1,279,817</b>	<b>202,850</b>	<b>411,755</b>	<b>4,655,712</b>	<b>72,214</b>	<b>6,622,348</b>

Table 68.—Shipments of Iron Ore from Wabana Mines, Newfoundland, 1895-1924

Year	To Nova Scotia	To United States	To Great Britain and Europe	Total shipments
	Short tons	Short tons	Short tons	Short tons
1895.....	2,686	.....	.....	2,686
1896.....	17,410	22,798	.....	40,208
1897.....	12,143	33,039	5,651	50,833
1898.....	34,622	.....	78,610	113,262
1899.....	26,311	98,485	214,322	339,118
1900.....	195,507	153,867	14,776	364,150
1901.....	457,064	84,292	279,102	820,458
1902.....	376,322	96,709	341,421	814,445
1903.....	273,283	90,711	287,793	651,787
1904.....	342,710	6,025	298,694	647,429
1905.....	506,819	6,090	255,846	769,755
1906.....	628,152	141,854	213,867	983,873
1907.....	672,561	123,972	167,074	963,607
1908.....	713,772	59,532	209,033	972,337
1909.....	697,068	241,207	171,722	1,109,997
1910.....	808,762	247,336	203,528	1,259,626
1911.....	737,261	207,193	237,009	1,181,463
1912.....	956,458	191,779	183,673	1,331,910
1913.....	1,048,433	229,402	328,086	1,605,921
1914.....	417,409	43,513	172,998	633,920
1915.....	802,128	.....	66,323	868,451
1916.....	1,012,060	.....	.....	1,012,060
1917.....	883,316	.....	.....	883,316
1918.....	848,574	.....	.....	848,574
1919.....	499,972	.....	.....	499,972
1920.....	624,596	.....	36,708	661,304
1921.....	178,519	.....	208,010	386,529
1922.....	311,482	.....	811,845	1,123,327
1923.....	451,483	.....	356,753	808,236
1924.....	174,602	.....	919,968	1,094,570
<b>Total.....</b>	<b>14,711,515</b>	<b>2,078,197</b>	<b>6,051,842</b>	<b>22,841,554</b>

## PIG IRON

(Ton = 2,000 lb.)

At 664,215 short tons the production of pig iron in Canada in 1924 was 33 per cent under the 985,401 tons of 1923, and 55 per cent over the 428,923 tons produced in 1922. About one-third (223,524 tons) was sold for \$4,518,887; at the same average selling value per ton, the value of the 1924 output would be \$13,343,603.

By grades, the production consisted of 400,628 tons of basic iron, 194,503 tons of foundry iron, 69,065 tons of malleable iron and 19 tons of direct castings as compared with 615,983 tons basic iron, 262,400 tons foundry, 106,935 tons of malleable iron and 83 tons direct castings in 1923. Ontario produced 465,888 tons or 70 per cent of the total as against 68 per cent in the previous year; the balance was made in Nova Scotia.

Taken by months the production dropped slightly from the 71,346 tons of January to 67,523 tons in February, then rose steadily until the record of 95,185 tons was reached in May, after which the tonnage fell off to 25,842 tons in August and remained around that level until the end of the year.

Per capita production of pig iron averaged 144 pounds in 1924 as compared with 215.5 pounds in 1923, a total of 95.6 pounds in 1922 and 151.4 pounds in 1921.

Blast furnaces for the production of pig iron were operated in conjunction with steel furnaces and rolling mills at Sydney, N.S., and in Ontario at Hamilton and Sault Ste. Marie. In addition to these, there are also blast furnaces standing at Port Colborne, Midland, Port Arthur, Parry Sound and Deseronto, with two others, unfinished, at Ojibway near Windsor.

To the furnaces located at the three first mentioned places the following materials for making pig iron were charged: 8,231 tons of Canadian ore valued at \$38,557; 1,184,575 tons of foreign ore at \$4,774,136; 1,313 tons of pyrite cinder at \$3,263; 32,732 tons of scrap at \$376,680 and 42,935 tons of mill cinder, scale and slag at \$82,851. Other general materials charged were 315,534 tons of limestone at \$446,950; 2,220 tons of other flux at \$2,464; 219,870 tons of coke made from Canadian coal at \$1,248,925 and 438,323 tons of coke made from foreign coal at \$3,179,930.



The ores of British Columbia and Quebec contain both lead and zinc. Thus, in addition to quantities noted in Table 71 there were 22,372,621 pounds of lead contained in zinc ores so termed because zinc was the predominating metal. Most of such shipments were from the Sullivan mine of the Consolidated Mining and Smelting Company of Canada, Limited.

Previous to 1904, lead ores mined in Canada were either exported as ore or smelted in Canadian furnaces and exported in the form of base bullion for refining. A lead refinery employing the Betts electrolytic process has been in operation at Trail, B.C., since 1904, treating the product from lead blast furnaces.

The production of refined lead at Trail amounted in 1924 to 62,726 tons as against 47,971 tons in 1923 and 39,276 tons in 1922, a total of 28,820 tons in 1921 and 13,237 tons in 1920.

The Kingdon Mining, Smelting and Manufacturing Company, Limited, which is now smelting ores from the Kingdon mine at Galetta, Ontario, has been in operation since early in 1919 producing a high-grade pig lead.

Table 70.—Production\* of Lead from Canadian Ores, 1887-1924

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per Pound
		\$				\$	
1887.....	204,800	9,216	5.400	1906.....	54,608,217	3,089,187	5.657
1888.....	674,500	29,812	4.420	1907.....	47,738,703	2,542,086	5.325
1889.....	165,100	6,488	3.930	1908.....	43,195,733	1,814,221	4.200
1890.....	105,000	4,704	4.480	1909.....	45,857,424	1,692,139	3.690
1891.....	88,665	3,857	4.350	1910.....	32,987,508	1,216,249	3.687
1892.....	808,420	33,064	4.090	1911.....	23,784,969	827,717	3.480
1893.....	2,135,023	79,636	3.730	1912.....	35,763,476	1,597,554	4.467
1894.....	5,703,222	187,636	3.290	1913.....	37,662,703	1,754,705	4.659
1895.....	16,461,794	531,716	3.230	1914.....	36,337,765	1,627,568	4.479
1896.....	24,199,977	721,159	2.980	1915.....	46,316,450	2,593,721	5.600
1897.....	39,018,219	1,396,853	3.580	1916.....	41,497,615	3,532,692	8.513
1898.....	31,915,319	1,206,399	3.780	1917.....	32,576,281	3,628,020	11.137
1899.....	21,862,436	977,250	4.470	1918.....	51,398,002	4,754,315	9.250
1900.....	63,169,821	2,760,521	4.370	1919.....	43,827,699	3,053,037	6.966
1901.....	51,900,958	2,249,387	4.334	1920.....	35,953,717	3,214,262	8.940
1902.....	22,956,381	934,095	4.069	1921.....	66,679,592	3,828,742	5.742
1903.....	18,139,283	768,562	4.237	1922.....	93,307,171	5,817,702	6.235
1904.....	37,531,244	1,617,221	4.309	1923.....	111,234,466	7,985,522	7.179
1905.....	56,864,915	2,676,632	4.707	1924.....	175,485,499	14,221,345	8.104
				<b>Total .....</b>	<b>1,450,118,067</b>	<b>84,984,992</b>	.....

\* Previous to 1913 the figures reported show the metal content of the shipments and are somewhat in excess of the actual amount recovered. Since 1912 the data given represent the quantity of lead produced in Canada from domestic ores, together with the estimated lead recovery from lead ores and concentrates exported. From 1887 to 1908, average prices at New York; 1909 and 1910, average prices at Toronto; from 1911 to date, average prices in Montreal were used in making up the values shown; since 1920 the quotations used have been furnished by the Consolidated Mining and Smelting Co., Montreal, Que.

## PRODUCTION OF LEAD FROM CANADIAN ORES 1887-1922.

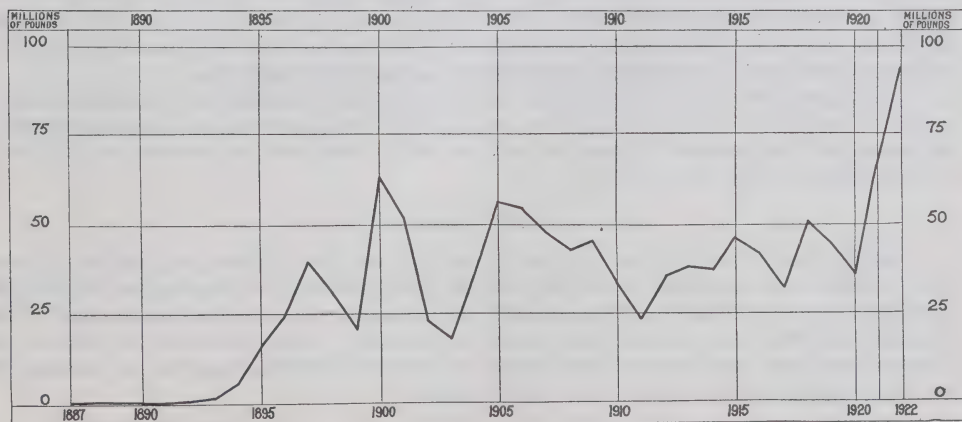


Table 71.—Shipments of Lead Ores and Concentrates from Canadian Mines in 1924

	Lead ores	Lead concentrates	Dry ores
Tons shipped.....	18,054	135,135	207
Reported value of shipments..... \$	1,097,297	11,179,340	14,062
Metal Content of Shipments—			
Gold.....	fine ounces. 521	1,030	28
Silver.....	" " 1,260,098	3,065,456	22,689
Lead.....	pounds 8,587,659	171,591,827	7,638
Zinc.....	" " 1,439,446	16,311,181	1,050

Table 72.—Refined Lead Produced in Canada,\* 1904-1924

Year	Pounds of refined lead produced	Year	Pounds of refined lead produced	Year	Pounds of refined lead produced
1904.....	7,519,440	1911.....	23,525,050	1918.....	31,571,112
1905.....	15,804,509	1912.....	35,893,190	1919.....	34,330,920
1906.....	20,471,314	1913.....	37,923,043	1920.....	28,720,030
1907.....	26,607,461	1914.....	36,443,706	1921.....	60,949,793
1908.....	36,549,274	1915.....	43,518,618	1922.....	81,412,716
1909.....	41,883,614	1916.....	33,087,474	1923.....	101,096,312
1910.....	32,987,508	1917.....	32,115,114	1924.....	130,471,208
				<b>Total.....</b>	<b>888,984,406</b>

\*Includes the electrolytic lead produced from Canadian and foreign ores at Trail, B.C., and also the pig-lead from Galetta, Ont.

### QUEBEC

Lead production in the province of Quebec dates from the year 1915 when some 40,000 pounds were produced, all of which was derived from the lead-zinc deposits of Notre Dame des Anges. The maximum output of 2.28 million pounds was made in 1919 due to the demands for lead during the war. During 1922 there was no production from these mines. However, in 1923 shipping was resumed and it was estimated that a total of 520,041 pounds was recovered from ores exported during that year. In 1924 this figure was almost doubled at 1,058,983 pounds.

### ONTARIO

Many years ago, two lead mines were operated in Frontenac county but it was not until 1913 that any statistical records of production were kept. During that year the deposits in Carleton county were opened up and some 33,000 pounds of lead were recovered. This property has been rapidly developed until at the present time the shaft is down to the 1,000-foot level and in 1924 production amounted to 5,019,485 pounds, which constituted a record for the Kingdon property. At the lower levels zinc also occurs; the zinc is separated from the lead in the mill and stored until a sufficient supply is obtained to make an export shipment.

Small quantities of lead are recovered from the silver-lead-bismuth bullion exported by the south Ontario smelters which handle the ores of the Cobalt district. In 1924, the recovery amounted to 35,883 pounds. The sum of the production from these two sources make a total of 5,055,368 pounds for the province.

### BRITISH COLUMBIA

Lead is derived from the zinc-lead ores of the East and West Kootenays in British Columbia. During 1924 the smelter production from British Columbia ores amounted to 168,467,628 pounds valued at \$13,652,617. This included the lead recovered in the lead smelter bullion at Trail and the estimated recoverable lead from ores exported. Compared with 1923 output when the production amounted to 99,541,818 pounds valued at \$7,146,107, there was an increase of 69.3 per cent in quantity and 91.0 per cent in value.

Table 73.—Production of Lead from Canadian Ores, by Provinces, 1887-1924

Year	Quebec		Ontario		British Columbia		Yukon	
	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$
1887.....					204,800	9,216		
1888.....					674,500	29,813		
1889.....					165,100	6,488		
1890.....	105,000	4,704						
1891.....	88,665	3,857						
1892.....					808,420	33,064		
1893.....	3,931	146			2,131,092	79,490		
1894.....					5,703,222	187,636		
1895.....					16,461,794	531,716		
1896.....					24,199,977	721,159		
1897.....	177,084	6,340			38,841,135	1,390,513		
1898.....	221,760	8,382			31,693,559	1,198,017		
1899.....					21,862,436	977,250		
1900.....	11,200	490			63,158,621	2,760,031		
1901.....	318,052	13,784			51,582,906	2,235,603		
1902.....	420,000	17,090			22,536,381	917,005		
1903.....			50,000	2,119	18,089,283	766,443		
1904.....			885,000	38,135	36,646,244	1,579,086		
1905.....			284,212	13,378	56,580,703	2,663,254		
1906.....			2,200,000	124,454	52,408,217	2,964,733		
1907.....					47,738,703	2,542,086		
1908.....					43,195,733	1,814,221		
1909.....					45,857,424	1,692,139		
1910.....					32,987,508	1,216,249		
1911.....					23,784,969	827,717		
1912.....					35,763,476	1,597,554		
1913.....			33,000	1,537	37,626,899	1,753,037	2,804	131
1914.....					36,289,845	1,625,422	47,920	2,146
1915.....	40,401	2,262	88,985	4,983	45,377,064	2,541,116	810,000	45,360
1916.....	698,760	59,485	685,932	58,393	39,157,701	3,333,496	955,222	81,318
1917.....	1,378,001	153,468	1,586,711	176,712	29,483,725	3,283,602	127,844	14,238
1918.....	2,110,059	195,180	1,684,366	155,804	47,594,328	4,402,475	9,249	856
1919.....	2,280,000	158,825	1,487,586	103,625	40,060,113	2,790,587		
1920.....	905,472	80,949	2,255,520	201,643	32,792,725	2,931,670		
1921.....	595,881	34,215	3,312,493	190,203	60,298,603	3,462,346	2,472,615	141,978
1922.....			2,890,397	180,216	87,093,266	5,430,265	3,323,508	207,221
1923.....	520,041	37,334	4,401,494	315,983	99,541,818	7,146,107	6,771,113	486,098
1924.....	1,058,983	85,820	5,055,368	409,687	168,467,628	13,652,617	903,520	73,221
<b>Total.....</b>	<b>10,933,290</b>	<b>862,331</b>	<b>26,901,064</b>	<b>1,976,872</b>	<b>1,396,859,918</b>	<b>81,093,223</b>	<b>15,423,795</b>	<b>1,052,567</b>

**Imports and Exports.**—The imports of lead and lead manufactures during 1924 were greater than in 1923 in only three commodities, namely, acetate and nitrate of lead, dry white lead and white lead ground in oil. The other items listed in the reports on the *Trade of Canada* were less than in 1923. The value of the products imported was less than in 1923 by approximately \$140,000. On the other hand, exports increased to more than double the 1923 figures. In 1923 pig lead and lead in ore amounting to 55,092,600 pounds with a value of \$3,032,144 were exported, whereas in 1924 exports totalled 121,862,000 pounds with a value of \$7,650,970. These figures in themselves show the results of the operations of the lead properties that have been recently developed.

Table 74.—Imports into Canada and Exports of Lead, 1922, 1923 and 1924

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Old and scrap, pig and block.....	2,001,987	105,527	2,751,455	145,094	693,244	50,847
Bars and sheets.....	263,612	17,957	407,840	31,321	115,836	12,682
Litharge.....	1,514,400	122,592	1,672,100	160,928	956,700	89,731
Acetate and nitrate of lead.....	217,487	20,330	179,881	17,727	207,364	19,115
Other manufactures.....		199,330		199,793		234,372
Pipe lead.....	96,716	6,458	85,351	6,568	48,961	4,183
Shots and bullets.....	10,324	4,173	10,705	1,255	10,579	1,324
Tea lead.....	225,729	21,530	215,345	19,622	203,324	22,080
Lead pigments:—						
Dry white lead.....	190,472	14,255	49,579	4,273	193,843	17,778
White lead, ground in oil.....	56,760	6,001	117,034	9,518	205,874	19,050
Dry red lead and orange mineral.....	966,846	74,921	867,759	76,510	704,282	64,719
<b>Total.....</b>		<b>593,074</b>		<b>672,609</b>		<b>535,881</b>
<b>EXPORTS—</b>						
Lead in ore.....	10,941,800	550,088	7,948,100	535,937	13,152,400	784,750
Pig-lead.....	41,481,900	1,877,050	47,144,500	2,496,207	108,709,600	6,166,220
<b>Total.....</b>	<b>52,423,700</b>	<b>2,427,138</b>	<b>55,092,600</b>	<b>3,032,144</b>	<b>121,862,000</b>	<b>7,650,970</b>

**Prices.**—During 1924 the highest point for the price of lead was reached in December when the price stood at 9.207 cents per pound on the New York market. In January of the same year the price quoted was 7.972 cents. There was a gradual increase to March when slightly over 9 cents was recorded. The price then declined until July when it stood at 7.117 cents per pound. A gradual increase occurred from that time on, till the end of the year. The high price of lead has been caused by the increased use of the metal in the automobile and other allied industries which have been growing steadily. Reports indicate a coming world shortage of lead as new properties are not being found to keep pace with the normal consumption and for that reason the price of lead is expected to advance. This is of great advantage to Canada as many of her lead deposits which have heretofore not paid dividends on their operations are now being opened up and considerable interest is being displayed in any lead deposits of commercial size.

Table 75.—Monthly Average Prices of Lead in Montreal, New York and London, 1922, 1923 and 1924

Month	(a) Montreal—cents per pound			(b) New York—cents per pound			(c) London—in £ Sterling per ton of 2,240 pounds		
	1922	1923	1924	1922	1923	1924	1922	1923	1924
							£ s. d.	£ s. d.	£ s. d.
January.....	6-152	7-245	7-84	4-700	7-633	7-97 <sup>c</sup>	23 13 4	27 2 4	31 10 7
February.....	5-897	7-561	8-8	4-700	8-050	8-554	20 13 8	28 10 4	34 11 9
March.....	5-930	7-798	8-79	4-720	8-252	9-013	21 5 4	28 16 3	37 3 3
April.....	5-908	7-243	7-8	5-115	8-101	8-763	22 19 10	26 19 1	32 16 5
May.....	6-139	6-841	7-04	5-420	7-306	7-269	24 9 3	25 12 3	29 8 6
June.....	6-190	6-760	7-32	5-745	7-146	7-021	24 13 8	25 8 7	32 2 9
July.....	6-235	6-480	7-49	5-729	6-237	7-117	24 17 4	24 3 9	32 18 4
August.....	6-226	6-593	7-64	5-824	6-582	7-827	24 11 7	24 4 5	31 14 7
September.....	6-178	6-865	7-74	6-110	6-856	8-000	24 2 7	25 13 9	33 0 5
October.....	6-235	7-205	8-23	6-530	6-831	8-235	25 11 0	27 16 3	35 4 4
November.....	6-775	7-682	9-20	7-047	6-846	8-689	26 3 11	30 7 0	39 8 6
December.....	6-957	7-870	9-86	7-163	7-369	9-207	26 1 7	31 0 10	41 11 8
<b>Average.....</b>	<b>6-235</b>	<b>7-179</b>	<b>8-10</b>	<b>5-734</b>	<b>7-267</b>	<b>8-097</b>	<b>24 1 11</b>	<b>27 2 11</b>	<b>34 8 5</b>

(a) Prices furnished by Consolidated Mining & Smelting Co. of Canada, Trail, B.C.

(b) Quoted from the *Engineering and Mining Journal-Press*.

Table 76.—World's Production of Lead, 1913, 1920-1924

(From the Year Book of the American Bureau of Metal Statistics, 1924)

(Short tons)

Country	1913	1920	1921	1922	1923	1924
<b>NORTH AMERICA—</b>						
United States.....	435,665	476,125	402,479	470,000	530,000	590,000
Canada*.....	18,822	18,187	34,381	45,842	53,899	86,583
Mexico.....	68,324	93,925	66,851	133,180	184,242	177,852
<b>Total North America.....</b>	<b>522,811</b>	<b>588,237</b>	<b>503,711</b>	<b>649,022</b>	<b>768,141</b>	<b>854,435</b>
<b>SOUTH AMERICA—</b>						
Argentina.....		3,857	2,756	3,986	4,000	5,000
Other South America.....	2,729	3,047	2,385	2,561	1,630	7,800
<b>Total South America.....</b>	<b>2,729</b>	<b>6,904</b>	<b>5,141</b>	<b>6,547</b>	<b>5,630</b>	<b>12,800</b>
<b>EUROPE—</b>						
Austria.....	26,558	4,379	3,689	4,106	4,690	5,494
Belgium.....	59,056	17,681	32,793	48,032	56,328	59,194
France.....	31,756	16,600	17,058	15,370	19,194	23,148
Germany (including Upper Silesia).....	207,176	65,036	82,676	81,090	56,451	67,467
Greece.....	20,177	5,547	6,140	4,853	4,667	5,333
Italy.....	23,885	17,578	13,763	11,960	13,885	24,318
Czecho-Slovakia and Jugo-Slavia.....		7,367	7,725	11,821	13,448	13,779
Poland (Upper Silesia excluded).....	2,976	1,653	1,113	110		
Russia.....	1,678					
Spain.....	219,110	193,118	149,760	131,394	140,559	154,322
Sweden.....	1,361	991	616	418	338	330
United Kingdom.....	20,304	12,275	2,727	5,551	7,512	5,938
<b>Total Europe.....</b>	<b>614,037</b>	<b>342,225</b>	<b>318,060</b>	<b>314,705</b>	<b>322,072</b>	<b>359,323</b>
<b>ASIA—</b>						
Turkey.....	15,318	1,102	9,199	5,952	1,543	5,626
India (Burma).....	6,535	26,679	37,737	43,919	51,239	57,969
Japan.....	4,162	4,607	3,459	3,570	3,307	2,205
<b>Total Asia.....</b>	<b>26,015</b>	<b>32,388</b>	<b>50,395</b>	<b>53,441</b>	<b>56,089</b>	<b>65,800</b>
<b>AUSTRALIA.....</b>	<b>126,207</b>	<b>7,642</b>	<b>63,071</b>	<b>118,064</b>	<b>137,364</b>	<b>140,645</b>
<b>AFRICA—</b>						
Rhodesia.....		16,353	19,808	22,962	12,343	7,003
Tunis.....		12,574	13,911	14,457	15,754	17,345
<b>Total Africa.....</b>		<b>28,927</b>	<b>33,719</b>	<b>37,419</b>	<b>28,097</b>	<b>24,348</b>
<b>Grand Total.....</b>	<b>1,291,799</b>	<b>1,006,323</b>	<b>974,097</b>	<b>1,179,198</b>	<b>1,317,363</b>	<b>1,457,351</b>

\*Dominion Bureau of Statistics reports the Canadian production of lead as follows: 1913—18,831 tons; 1920—17,977 tons; 1921—33,340 tons; 1922—46,653 tons; 1923—55,617 tons; 1924—87,743 tons.

## MERCURY

There has been no production of mercury recorded since 1897. The small production reported in 1895, 1896, and 1897, was derived from the deposits at the western end of Kamloops Lake, B.C. These deposits consist of quartz veins containing pockets of cinnabar, in a zone of decomposed tertiary volcanic rocks.

Mercury has also been reported as occurring in the ores of the Cobalt district, and in the neighbourhood of Field, B.C., and Sechart, on the west coast of Vancouver Island.

The imports of mercury during 1924 were 85,459 pounds, valued at \$60,675, as compared with 135,953 pounds valued at \$95,922 in 1923.

Table 77.—Production of Mercury in Canada, 1895-1924

Year	Flasks	Price per flask	Value
		\$	\$
1895.....	71	33.00	2,343
1896.....	58	33.44	1,940
1897.....	9	36.00	324
1898-1924.....			

Table 78.—Imports into Canada of Mercury, 1921, 1922, 1923 and 1924

Year	Pounds	Value
1921.....	30,894	\$ 20,570
1922.....	59,296	47,742
1923.....	135,953	95,922
1924.....	85,459	60,675

Table 79.—Monthly Average Price of Mercury, 1922, 1923 and 1924

(At New York, per flask of 75 pounds)

Month	1922	1923	1924
	\$	\$	\$
January.....	49-960	72-731	59-500
February.....	45-265	70-636	59-565
March.....	50-204	70-808	64-289
April.....	52-280	69-200	74-303
May.....	54-585	68-000	76-962
June.....	55-115	67-769	73-720
July.....	55-000	66-080	72-173
August.....	57-593	65-212	72-096
September.....	67-640	63-000	72-423
October.....	72-560	61-769	70-554
November.....	71-521	61-917	68-703
December.....	72-300	60-000	72-750
Average.....	55-946	66-502	69-761

## MOLYBDENUM

Molybdenite deposits are known to occur in Nova Scotia, Quebec, Ontario, Manitoba and British Columbia but the principal production has come from the Quyon mine in Pontiac county in Quebec.

The Moss mine at Quyon, Quebec, reported a production of 20,452 pounds of molybdenum concentrates containing 91.62 per cent  $\text{MoS}_2$ , or 18,739 pounds of molybdenum sulphide which, at 50 cents per pound, was worth \$9,370. This was the first Canadian production since 1919. All the molybdenite ore produced in Canada has been concentrated in Canadian mills erected for the purpose.

The war stimulated the demand for molybdenum ores to an appreciable extent but with the cessation of hostilities, the producers were left with considerable stocks on hand for which there was no immediate market, owing to the limited uses of the metal. The ore produced was mostly low-grade material carrying less than 2 per cent  $\text{MoS}_2$ , but there was some which ran from 2 to 15 per cent  $\text{MoS}_2$ , and some higher grade hand-picked material produced.

**Prices.**—The market price for molybdenum ore, 85 per cent  $\text{MoS}_2$ , in January, 1924, was 80 cents per pound of contained sulphide. This price was maintained until the latter part of the year when it declined to between 65 cents and 75 cents per pound.

Table 80.—Production of Molybdenite in Canada, 1902-1924

Year	Ores mined	Ores treated	Ores and concentrates shipped		MoS <sub>2</sub> content of shipments	MoS <sub>2</sub> production (probable recovery)	
	Tons	Tons	Tons	Value (a)	Pounds	Pounds	Value (b)
1902.....	3		3.3	\$ 400	(c)	(c)	(c)
1903.....	600		85.0	1,275	(c)	(c)	(c)
1904-1913.....							
1914.....	166		16.5	2,063	3,814	3,814	\$ 2,063
1915.....	2,242	216	39.0	28,920	29,210	29,210	28,450
1916.....	13,522	9,106	610.0	188,316	156,461	156,461	156,461
1917.....	26,871	22,605	1,554.3	320,006	330,316	288,705	288,705
1918.....	34,030	33,935	461.3	428,887	378,482	378,029	434,733
1919.....	7,280	6,783	46.0	69,203	83,002	83,002	69,203
1920-1923.....							
1924.....	700	668	10.0	9,370	18,739	18,739	9,370

(a) Value as given by the operators.

(b) Estimated at the average market value of molybdenite.

(c) No figures available.

## NICKEL

Production of nickel during 1924 amounted to 69,536,350 pounds which valued at the average New York price of 28 cents per pound was worth \$19,470,178. Compared with an output of 62,453,843 pounds valued at \$18,332,077 in 1923 when the price per pound was 29·353 cents, this marked a distinct advance. It was also greater than the total for any year since 1918 when the maximum production of 92·5 million pounds was reached.

During the year the tonnage of nickel-bearing ore raised in the Sudbury district amounted to 1,411,978 tons. The smelters treated 1,307,963 tons and produced 65,944 tons of matte carrying 69,276,313 pounds of nickel and 36,979,424 pounds of copper.

Corresponding data for 1923 showed 1,187,355 tons of ore raised, 1,140,160 tons of ore smelted and matte production totalling 58,084 tons carrying 62,057,800 pounds of nickel and 31,539,000 pounds of copper.

The average quantities of metal recovered from ores treated in 1924 were: nickel, 2·65 per cent, and copper, 1·41 per cent. In 1923 the recoveries were 2·72 per cent of nickel and 1·38 per cent of copper.

During July, 1924, the British America Nickel Corporation went into liquidation, and as a consequence the properties formerly operated by this company remained idle during the rest of the year.

Table 81.—Production of Nickel from Canadian Ores, 1889-1924

Year	Pounds of nickel	Cents per pound	Value	Year	Pounds of nickel	Cents per pound	Value
			\$				\$
1889.....	830,477	60	498,286	1908.....	19,143,111	43	8,231,538
1890.....	1,435,742	65	933,232	1909.....	26,282,901	36	9,461,877
1891.....	4,035,347	60	2,421,208	1910.....	37,271,033	30	11,181,310
1892.....	2,413,717	58	1,399,956	1911.....	34,098,744	30	10,229,623
1893.....	3,982,982	52	2,071,151	1912.....	44,841,542	30	13,452,463
1894.....	4,907,430	38½	1,870,958	1913.....	49,676,772	30	14,903,032
1895.....	3,883,525	35	1,360,984	1914.....	45,517,937	30	13,655,381
1896.....	3,397,113	35	1,188,990	1915.....	68,308,657	30	20,492,597
1897.....	3,997,647	35	1,399,176	1916.....	82,958,564	35	29,035,497
1898.....	5,517,690	33	1,820,838	1917.....	84,330,280	40	33,732,112
1899.....	5,744,000	36	2,067,840	1918.....	92,507,293	40	37,002,917
1900.....	7,080,227	47	3,327,707	1919.....	44,544,883	40	17,817,953
1901.....	9,189,047	50	4,594,523	1920.....	61,335,706	40	24,534,282
1902.....	10,693,410	47	5,025,903	1921.....	19,293,060	35	6,752,571
1903.....	12,505,510	40	5,002,204	1922.....	17,597,123	35	6,158,993
1904.....	10,547,883	40	4,219,153	1923.....	62,453,843	29·353	18,332,077
1905.....	18,876,315	40	7,550,526	1924.....	69,536,350	28	19,470,178
1906.....	21,490,955	42	8,948,834				
1907.....	21,189,793	45	9,535,407	<b>Total.....</b>	<b>1,011,421,699</b>		<b>359,681,277</b>

PRODUCTION OF NICKEL IN CANADA 1889-1922

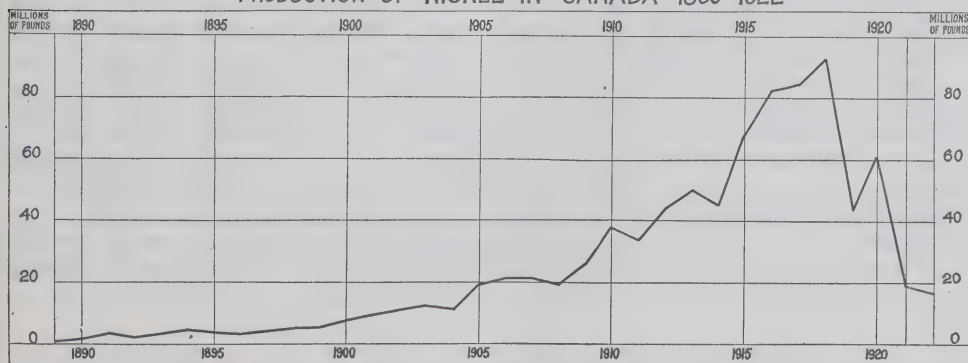


Table 82.—Proportion of Nickel and Copper in Sudbury Matte, 1912-1924

Year	Percentage		
	Nickel	Copper	Total
1912.....	53.5	26.3	79.8
1913.....	52.7	27.4	80.1
1914.....	49.0	31.1	80.1
1915.....	50.3	29.0	79.3
1916.....	51.6	28.0	79.6
1917.....	50.6	26.9	77.5
1918.....	52.6	26.0	78.6
1919.....	51.6	28.3	79.9
1920.....	52.7	27.6	80.3
1921.....	49.4	32.4	81.8
1922.....	50.1	31.3	81.4
1923.....	53.4	27.2	80.6
1924.....	52.6	27.9	80.5

Table 83.—Sales of Nickel from the Silver-Cobalt-Nickel Smelters of Southern Ontario 1912-1924

Year	Metallic Nickel		Nickel Oxides(a)	
	Pounds	Value	Pounds	Value
		\$		\$
1912.....			91,377	9,137
1913.....			268,304	30,122
1914.....			392,512	34,883
1915.....	55,325	22,130	(b) 282,025	31,262
1916.....	79,360	31,538	(b) 555,868	101,358
1917.....	265,896	108,334	(b) 657,549	122,963
1918.....	243,186	88,720	(b) 962,309	215,277
1919.....	397,884	137,435	(b) 340,389	32,862
1920.....	204,537	71,287	(b) 24,112	6,312
1921.....	10,973	3,442	(b) 105,535	4,034
1922.....	106,318	31,035	(b) 37,317	3,952
1923.....	33,593	10,075	71,484	9,246
1924.....	14	4	60,662	9,414

(a) Does not include mixed oxides of cobalt and nickel. See Table 37.

(b) Nickel-sulphate included with nickel oxides.

Table 84.—Imports into Canada and Exports of Nickel 1922, 1923 and 1924

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Nickel, nickel silver and German silver, in ingots or blocks, n.o.p.....	42,286	13,257	35,045	12,410	21,761	8,591
Nickel in bars and rods, strips, sheets and plates.....	937,483	143,675	492,177	153,564	624,173	111,827
Nickel silver and German silver, in bars, rods, strips, sheets, plates or anodes.....	386,764	100,730	298,902	82,407	229,182	59,609
German, Nevada and nickel silver, manufactures of, not plated.....		203,838		207,242		193,283
Nickel-plated household hollow-ware.....		25,849		32,656		39,345
Nickel-plated ware, n.o.p.....		1,314,688		1,240,762		1,219,515
<b>Total Nickel and its Products.....</b>		<b>1,502,037</b>		<b>1,729,041</b>		<b>1,632,170</b>
<b>EXPORTS—</b>						
Nickel, fine, contained in ore, matte or speiss.....	16,768,200	2,536,347	28,971,000	4,077,000	36,712,200	5,176,907
Nickel, fine.....	14,449,700	4,287,941	22,897,900	4,649,251	25,985,800	5,090,059
<b>Total.....</b>	<b>31,217,900</b>	<b>6,824,288</b>	<b>51,868,900</b>	<b>8,726,251</b>	<b>62,698,000</b>	<b>10,266,966</b>

**Prices.**—The average price of electrolytic nickel in New York during 1921 according to quotations published by the "*Engineering and Mining Journal-Press*" was 44 cents per pound for ingots and 41 cents for shot. These quotations were merely nominal owing to the depressed condition of the market. During 1922 new uses were being developed for nickel. Whereas, prior to and during the war a very large proportion of the metal was consumed by armament manufacturing, the cessation of war activities followed by the Washington conference on the limitations of armaments, led producers to investigate new outlets for nickel. These have been found in part in the adaptability of nickel for the cooking-utensil trade, and in the manufacture of resistance wires in electric heating appliances, as a material for coinage, as a constituent of numerous alloys and in the growing use of the metal in the motor car industry. This increased consumption and the lower prices prevailing, have been the important factors in the renewed activity. The average price was 35 cents per pound in 1922; 29.3 cents per pound in 1923, and 28 cents per pound in 1924.

**Table 85.—World's Production of Nickel, 1921-1924**

(In terms of metal)

(Short tons)

(From "*The Mineral Industry of the British Empire and Foreign Countries, 1921-1923*")

Country	1921	1922	1923	1924
Canada.....	9,647	8,799	31,226	34,768
Germany (Russia).....			(a) 3	
Italy.....	13	(b)	49	
Norway.....	124	102	68	
United States (c).....	111	208	100	
New Caledonia (d).....	1,670	3,906	2,939	(e) 4,005
<b>Total</b> .....	<b>11,465</b>	<b>13,015</b>	<b>34,385</b>	<b>38,773</b>

(a) Ore, nickel content not stated.

(b) Less than  $\frac{1}{2}$  ton.

(c) Nickel content of salts and nickel produced as a by-product in the electrolytic refining of copper.

(d) Exports.

(e) From "*The Mineral Industry 1924*".

## PLATINUM AND PALLADIUM

The most important sources of the metals of the platinum group in Canada are the nickel-copper ores of Sudbury, Ontario, but due to the fact that these metals occur in very small quantities per ton of ore and also that their recovery can only be made in the refining of the copper and nickel, the most of the platinum from these ores has been recovered by the refineries operating in foreign countries. It was not until 1918, when the International Nickel Company of Canada built its refinery at Port Colborne, that these metals were recovered in Canada. The British America Nickel Corporation Limited, opened its refinery at Deschênes, Quebec, in the following year. In both these plants, the precious metals are recovered as residues which are exported for further treatment. During 1924 the Mond Nickel Company reported their production of the rare metals recovered at their refinery in Swansea, Wales. No record of recoveries at this plant had been obtained in previous years. This is the principal reason for the apparently increased platinum and palladium production during 1924.

For many years metals of the platinum group have been recovered at the New Jersey plant of the International Nickel Company from residues obtained in the refining of the Sudbury nickel-copper mattes; but as residues from other sources were treated with those of Canadian ores, the total recovery could not be regarded as of Canadian origin; nevertheless, it is believed that the Sudbury mattes have been the source of by far the greater part of the platinum group metals recovered. This New Jersey plant operated for a month or two only during 1922 and was then dismantled.

Platinum is also found in the alluvial sands of British Columbia, but the output which up to the present has been won by individual placer operators, is of small importance.

Table 86.—Summary of Platinum Statistics, 1923 and 1924

Source	1923			1924		
	Platinum	Palladium	Rhodium, etc.	Platinum	Palladium	Rhodium, etc.
Produced by refineries in Canada or elsewhere, from Canadian mattes and residues, ..... Fine ozs.	1,210	1,732	(a) 304	9,181	8,923	(b) 593
Value	\$141,010	\$138,560	\$45,000	\$1,090,858	\$811,993	\$51,120
British Columbia placers..... Fine ozs.	7	.....	.....	5	.....	.....
Value	\$816	.....	.....	\$ 569	.....	.....
<b>Canada..... Fine ozs</b>	<b>1,217</b>	<b>1,732</b>	<b>(a) 304</b>	<b>9,186</b>	<b>8,923</b>	<b>(b) 593</b>
<b>Value</b>	<b>\$141,826</b>	<b>\$138,560</b>	<b>\$45,000</b>	<b>\$1,091,427</b>	<b>\$811,993</b>	<b>\$51,120</b>

(a) 206 oz. Rhodium valued at \$18,540 and 98 oz. Iridium valued at \$26,460.

(b) 367 oz. Rhodium valued at \$27,500,—69 oz. Osmium valued at \$4,924,—78 oz. Rothenium valued at \$2,106 and 79 oz. Iridium valued at \$16,590.

Table 87.—Production of Platinum in Canada from Alluvial Sands, 1887-1924

Year	Value	Year	Value	Year	Fine ounces	Value
	\$		\$			\$
1887.....	5,600	1897.....	1,600	1913.....	18	489
1888.....	6,000	1898.....	1,500	1914.....	.....	.....
1889.....	2,500	1899.....	825	1915.....	23	1,063
1890.....	4,500	1900.....	.....	1916.....	15	600
1891.....	10,000	1901.....	457	1917.....	57	3,823
1892.....	3,500	1902.....	190	1918.....	39	2,506
1893.....	1,800	1903.....	.....	1919.....	25	2,105
1894.....	950	1904.....	420	1920.....	17	791
1895.....	3,800	1905.....	500	1921.....	23	1,558
1896.....	750	1906.....	.....	1922.....	12	1,154
		1907-1912.....	.....	1923.....	7	816
				1924.....	5	569

Table 88.—Recovery at the International Nickel Company's Works\*—New Jersey, U.S.A., 1907-1922

Year	Matte treated	Gold	Silver	Platinum	Palladium	Rhodium	Others
	Tons	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
1907.....	17-840	993-572	63,400-70	226-800	607-300	(a)	.....
1908.....	18-839	5,238-181	139,329-29	172-316	328-287	(a)	.....
1909.....	18-407	2,113-669	63,138-66	546-627	1,270-598	(a)	.....
1910.....	24-309	2,649-799	60,256-83	258-325	522-804	(a)	.....
1911.....	26-840	2,203-052	70,954-38	655-552	753-363	(a)	.....
1912.....	27-653	2,476-558	62,169-66	496-850	680-130	(a)	.....
1913.....	38-733	2,336-405	77,924-03	192-863	207-713	191-067	.....
1914.....	40-267	2,695-957	75,928-18	748-440	756-300	515-801	.....
1915.....	31-428	3,444-785	101,793-17	452-430	543-240	57-475	.....
1916.....	56-405	3,495-123	110,285-21	1,016-581	1,344-915	257-070	.....
1917.....	50-209	1,954-934	92,963-67	970-695	1,354-459	325-407	.....
1918.....	62-250	1,968-703	107,076-78	649-737	786-654	472-579	.....
1919.....	19-528	634-043	35,689-79	616-716	762-217	227-294	(b) 76-613
1920.....	30-740	613-338	81,882-78	488-901	739-158	300-336	(b) 102-363
1921.....	(c) 2,217-000	6-901	1,242-74	281-582	382-626	256-110	(b) 10-655
1922.....	(c) 3,112-000	206-542	12,211-66	137-882	300-839	103-874	(b) 20-563

\*Plant dismantled during 1922.

(a) Figures not given separately.

(b) Includes Osmium, Iridium and Ruthenium.

(c) These quantities bear no relation to the amounts of precious metals recovered.

Platinum is also recovered in a small way at the Royal Mint in the form of platinum black, a dull black powder of metallic platinum, which is obtained from the treatment of dental and old jewellery scrap. The following table shows the recoveries since 1919.

**Table 89.—Recovery of Platinum Black, Iridium Precipitate, and Palladium at the Royal Mint, Ottawa, 1919-1924**

Year	Platinum		Iridium		Palladium	
	Ozs. gross	Value	Ozs. gross	Value	Ozs. gross	Value
1919.....	29·281	\$ 2,711·59	20·782	\$ 2,268·12	0·696	\$ 87·00
1920.....	7·220	\$ 400·56				
1921.....	18·843	\$ 1,160·73				
1922.....	12·386	\$ 1,102·35				
1923.....	4·520	\$ 393·47				
1924.....	16,186	\$ 1,408·99				

**Table 90.—Imports into Canada and Exports of Platinum, 1922, 1923 and 1924**

	1922		1923		1924	
	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Crucibles.....		3,976		10,177		11,567
Wire and bars, strips, sheets or plates.....		91,425		117,607		167,225
Retorts, pans, condensers, etc.....		887		40,471		579
<b>Total .....</b>		<b>96,288</b>		<b>168,255</b>		<b>179,371</b>
<b>EXPORTS—</b>						
Jewellers sweepings.....		216,118		274,467		344,074
Ores and concentrates.....	35	3,626	349	33,838	467	47,723
Old and scrap.....	151	13,328	126	8,988	237	24,372
<b>Total.....</b>		<b>233,072</b>		<b>317,293</b>		<b>416,169</b>

**Table 91.—Monthly Average Prices of Platinum, 1922, 1923 and 1924**

(From the *Engineering and Mining Journal-Press*, 1924)

(In dollars per fine ounce.)

Month	1922	1923	1924
	\$	\$	\$
January.....	97·260	112·462	122·115
February.....	89·545	113·273	124·739
March.....	87·500	110·846	121·692
April.....	87·500	116·840	115·577
May.....	85·529	115·007	115·731
June.....	87·212	115·615	116·000
July.....	90·180	116·000	118·231
August.....	98·370	116·000	120·000
September.....	117·280	116·000	118·923
October.....	109·440	116·923	118·000
November.....	108·000	124·479	117·792
December.....	113·600	125·000	117·000
<b>Average.....</b>	<b>97·618</b>	<b>116·537</b>	<b>118·817</b>

**Table 92.—Platinum Metals Consumed in the United States as Reported by Refiners and by Industries, 1923-1924**

(In Troy Ounces)

(From *Mineral Resources of the United States, 1924—Part 1, Pages 9-22*).

Industry	Platinum	Iridium	Palladium	Others	Total	Percentage of total
<b>1923</b>						
Chemical.....	8,637	190	485	266	9,578	5
Electrical.....	18,596	1,675	3,666		23,937	13
Dental.....	16,288	153	10,116		26,557	14
Jewelry.....	105,699	3,073	14,948	190	123,910	65
Miscellaneous.....	3,156	1,403	986	1,256	6,801	3
<b>Total.....</b>	<b>152,376</b>	<b>6,494</b>	<b>30,201</b>	<b>1,712</b>	<b>190,783</b>	<b>100</b>
<b>1924</b>						
Chemical.....	10,507	122	436	403	11,468	7
Electrical.....	16,588	1,269	3,099		20,956	13
Dental.....	11,092	131	10,049		21,272	13
Jewelry.....	87,151	2,204	12,480	746	102,581	62
Miscellaneous.....	5,012	634	2,122	973	8,741	5
<b>Total.....</b>	<b>130,350</b>	<b>4,360</b>	<b>28,186</b>	<b>2,122</b>	<b>165,018</b>	<b>100</b>

Prior to the war, the world's supply of platinum was derived almost entirely from the Ural Mountains in Russia, but when hostilities commenced in the fall of 1914 the Russian production was reduced almost one-third. The subsequent internal troubles further crippled the platinum industry in that country and there has been only a relatively small production during the last few years.

**Table 93.—World's Production of Crude Platinum from Placers, 1914-1923**

(In Troy Ounces)

(From *Mineral Resources of the United States, 1924—Part I, Page 50*).

Country (a)	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Australia—										
New South Wales (b).....	244	56	82	259	607	213	796	249	80	586
Papua (c).....	(c)	(c)	(c)	(c)	(c)	(c)	100	360	100	115
Tasmania (d).....	1,019	247	222	332	1,607	1,670	2,009	1,751	1,174	673
British India (e).....	37	18	9	4	(f)					
Canada (g).....	30	100	60	80	40	30	25	15	15	10
Colombia (h).....	17,500	18,000	25,000	32,000	35,000	35,000	35,000	35,500	40,000	42,000
Japan (i).....			70	127	51	155	258	231	150	224
Russia (h).....	241,200	124,000	63,900	50,000	25,000	30,000	35,000	20,000	22,000	20,000
Union of South Africa (k).....	(j)	(j)	(j)	(j)	(j)	(j)	(j)	510	762	1,784
United States.....	570	742	750	605	647	824	613	977	1,008	60

(a) In addition to the countries listed, Brazil exported 700 grams (23 ounces) in 1915.

(b) New South Wales Dept. Mines Ann. Repts.

(c) Territory of Papua Mines Dept. Rept. (production osmiridium, year ending June 30). Prior to 1920 annual production had not exceeded 10 ounces.

(d) Tasmania Dept. Mines Ann. Repts. (Tasmania production all osmiridium).

(e) India Geol. Survey Records.

(f) Production 0-31 ounce.

(g) Estimate by J. M. Hill: Canada Dept. Mines Ann. Repts. give the following figures (believed low): 1914, none; 1915, 23; 1916, 15; 1917, 57; 1918, 39; 1919, 25; 1920, 17; Dominion Bureau of Statistics: 1921, 23; 1922, 12; 1923—7.

(h) Estimate by J. M. Hill.

(i) Agricultural and commercial statistics of Japan.

(j) Data not available.

(k) Department Mines and Industry Ann. Rept. (osmiridium).

In addition to the above, there is of course a considerable quantity of platinum recovered yearly from scrap and old material.

**SILVER****CANADA**

**SPECIAL NOTE.**—Prior to 1922, the method used in compiling the statistics on the silver production of Canada was to include, except for Ontario, the quantities of silver produced from Canadian ores either in Canadian or foreign smelters. For Ontario, the sales of silver bullion from the mines and smelters were considered as the year's production. In order to bring the practice for Ontario into harmony with that used in computing the silver output for the other provinces, adjustments amounting to 1,222,450 ounces were made for 1922 to take account of the stocks of silver bullion on hand at the end of 1921 which had not been previously included in the reports on the mineral production of Canada.

Production of silver from Canadian ores during 1924 amounted to 19,736,323 fine ounces which at the average price for the year of 66·781 cents per ounce, was valued at \$13,180,113 as against 18,601,744 fine ounces valued at \$12,067,509, when the average price was 64·873 cents per ounce. This was an increase of 6 per cent in quantity and 9·2 per cent in value over the totals for 1923.

The production in 1924 included (a) silver contained in silver and gold bullion 10,120,311 fine ounces or 51·3 per cent of the total for Canada; (b) silver contained in blister copper and lead bullion, 5,074,010 fine ounces or 25·6 per cent and (c) silver estimated to have been recovered from ores, concentrates, etc., exported 4,542,002 fine ounces or 23·1 per cent. The corresponding figures for 1923 were (a) 9,472,908 fine ounces or 50·9 per cent; (b) 3,892,837 fine ounces or 20·9 per cent and (c) 5,235,999 fine ounces or 28·2 per cent.

Although no official statistics of the production of silver had been published prior to 1887, the annual reports of the operating companies showed that from 1869 to 1885 the total production amounted to about four million ounces of silver with a probable value of \$4,800,000. The producing mines were situated in the Port Arthur district in Ontario. From 1887 to 1893 the production ranged in value between \$300,000 and \$400,000 and was derived chiefly from Ontario and Quebec. The next three years saw a rapid increase in production due to the development of the silver-lead deposits of British Columbia, and in 1897 a production of over \$3,000,000 was recorded. From that year until 1905 the production varied between \$2,000,000 and \$3,500,000 rising rapidly during the next six years to \$17,580,455 in 1910, as a result of the discovery of the rich ores of the Cobalt district. Since then there has been a falling-off in quantity, but owing to the higher price of the metal, the value of the annual production increased to a maximum of \$20,693,704 in 1918. It will be noticed in the table of production that the output for 1919 though only 50 per cent of that of 1910 or 1911, when the production was at its maximum, was more than equal in value.

Ontario has been the main producer of silver in Canada since 1906, its contribution increasing from 41 per cent of the total for Canada in 1905 to a maximum of 94 per cent in 1911. By 1914 it had fallen to 88·4 per cent and it then gradually decreased each year until 1921 when it stood at 25 per cent. It rose again in 1922 to 48·2 per cent, excluding the corrective figures included in that year. In 1923 it amounted to 56·6 per cent and in 1924, to 57·1 per cent.

The production of silver from British Columbia was greater in 1924 than in any other year on record and exceeded the output for 1923 by about two million ounces. This province contributed 41·3 per cent of the total Canadian production during the year. The balance of the production, about 1·6 per cent, was made up from small quantities contained in the gold bullion recovered from Nova Scotia and Manitoba gold ores; the silver in pyritic and lead-zinc ores exported from Quebec; the silver estimated as recoverable from the lead ores exported from the Keno Hill district of the Yukon Territory and the silver associated with the placer gold recovered from the same Territory.

Table 94.—Production of Silver in Canada, 1887-1924

Year	Fine ounces	Value	Cents per ounce	Year	Fine ounces	Value	Cents per ounce
		\$				\$	
1887.....	8,473,379	5,659,455	66·79	1907.....	12,779,799	8,348,659	65·33
1888.....	355,083	347,271	98·00	1908.....	22,106,233	11,686,239	52·86
1889.....	437,232	410,998	94·00	1909.....	27,529,473	14,178,504	51·50
1890.....	383,318	358,785	93·60	1910.....	32,869,264	17,580,455	53·49
1891.....	400,687	419,118	104·60	1911.....	32,559,044	17,355,272	53·30
1892.....	414,523	409,549	98·00	1912.....	31,955,660	19,440,165	60·83
1893.....	310,651	272,130	86·00	1913.....	31,845,803	19,040,924	59·79
1894.....	428,738	330,128	77·00	1914.....	28,449,821	15,593,631	54·81
1895.....	847,697	634,049	63·00	1915.....	26,625,960	13,228,842	49·68
1896.....	1,578,275	1,030,299	65·28	1916.....	25,459,741	16,717,121	65·66
1897.....	3,205,343	2,149,503	67·06	1917.....	22,221,274	18,091,895	81·417
1898.....	5,558,446	3,323,395	59·79	1918.....	21,383,979	20,693,704	96·772
1899.....	4,452,333	2,593,929	58·26	1919.....	16,020,657	17,802,474	111·122
1900.....	3,411,644	2,032,658	59·58	1920.....	13,330,357	13,450,330	100·900
1901.....	4,468,225	2,740,362	61·33	1921.....	13,543,198	8,485,355	62·654
1902.....	5,539,192	3,265,354	58·95	1922.....	18,626,439	12,576,758	67·521
1903.....	4,291,317	2,238,351	52·16	1923.....	18,601,744	12,067,509	64·873
1904.....	3,198,581	1,709,642	53·45	1924.....	19,736,323	13,180,113	66·781
1905.....	3,577,526	2,047,095	57·22				
1906.....	6,000,023	3,621,133	60·35	<b>Total.....</b>	<b>472,976,882</b>	<b>395,011,154</b>	

## PRODUCTION OF SILVER IN CANADA 1887-1922.

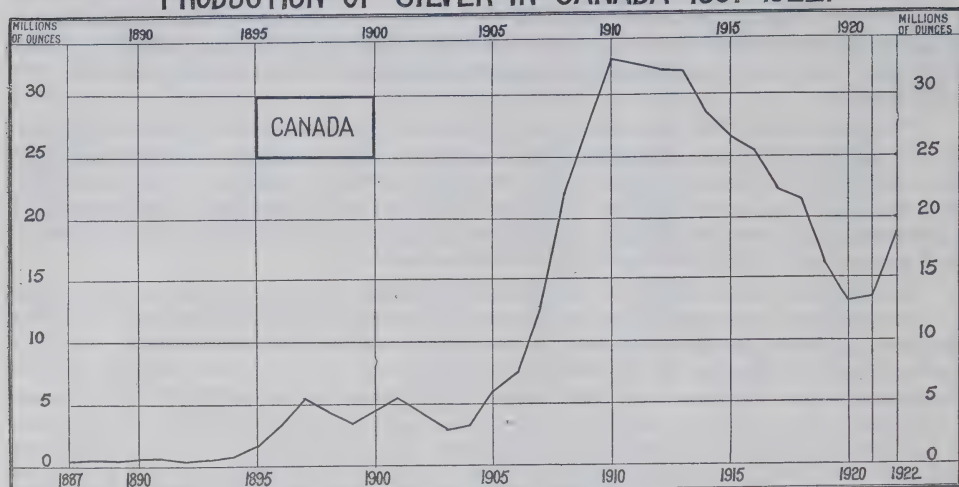


Table 95.—Production of Silver from Canadian Ores,\* by Provinces, 1887-1924

Year	Quebec		Ontario		British Columbia		Yukon Territory	
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value
1887.....	146,898	\$ 143,666	190,495	\$ 186,304	17,690	\$ 17,301	.....	.....
1888.....	149,388	140,425	208,064	195,580	79,780	74,993	.....	.....
1889.....	148,517	139,012	181,609	169,986	53,192	49,787	.....	.....
1890.....	171,545	179,436	158,715	166,066	70,427	73,666	.....	.....
1891.....	185,584	183,357	225,633	222,926	3,306	3,266	.....	.....
1892.....	191,910	168,113	41,581	36,425	77,160	67,592	.....	.....
1893.....	.....	126,439	.....	8,689	.....	195,000	.....	.....
1894.....	101,318	63,890	.....	.....	746,379	470,219	.....	.....
1895.....	81,753	53,369	.....	.....	1,496,522	876,930	.....	.....
1896.....	70,000	46,942	.....	.....	3,135,343	2,102,561	.....	.....
1897.....	80,475	48,116	5,000	2,990	5,472,971	3,272,289	.....	.....
1898.....	74,932	43,655	85,000	49,521	4,292,401	2,500,753	.....	.....
1899.....	40,231	23,970	202,000	120,352	2,939,413	1,751,302	230,000	137,034
1900.....	58,400	35,817	161,650	99,140	3,958,175	2,427,548	290,000	177,857
1901.....	41,459	24,440	151,400	89,250	5,151,333	3,036,711	195,000	114,953
1902.....	42,500	22,168	145,000	75,632	3,917,917	2,043,586	185,900	96,985
1903.....	28,600	15,287	17,777	9,502	2,996,204	1,601,471	156,000	83,362
1904.....	15,000	8,583	206,875	118,376	3,222,481	1,843,935	133,170	76,201
1905.....	19,620	11,841	2,451,356	1,479,442	3,439,417	2,075,757	89,630	54,093
1906.....	17,686	11,812	5,401,766	3,607,894	2,990,262	1,997,226	63,665	42,522
1907.....	16,000	10,453	9,982,363	6,521,178	2,745,448	1,793,519	35,988	23,510
1908.....	13,299	7,030	19,398,545	10,254,847	2,631,389	1,891,058	63,000	33,304
1909.....	18,233	6,835	24,822,099	12,734,126	2,649,141	1,864,387	45,000	23,176
1910.....	7,593	4,061	30,366,366	16,241,755	2,407,887	1,287,883	87,418	46,756
1911.....	18,435	9,827	30,540,734	16,279,443	1,887,147	1,612,737	81,068	49,318
1912.....	9,465	5,758	29,214,025	17,772,352	2,651,002	1,005,924	112,706	60,078
1913.....	34,573	20,672	28,411,261	16,987,377	3,512,343	1,980,483	87,626	48,318
1914.....	57,737	31,646	25,139,214	13,779,055	3,159,897	1,731,971	92,973	50,959
1915.....	63,450	31,524	22,748,609	11,302,419	3,565,852	1,771,658	248,049	123,241
1916.....	98,610	64,748	21,608,158	14,188,133	3,892,872	2,227,794	360,101	236,446
1917.....	136,194	110,885	19,301,835	15,714,975	2,655,994	2,162,430	119,605	97,379
1918.....	178,675	172,907	17,198,737	16,643,562	3,921,836	3,794,755	71,915	69,594
1919.....	140,926	156,600	12,117,878	13,465,628	3,713,537	4,126,556	27,556	30,621
1920.....	61,003	61,552	9,907,626	9,996,795	3,327,028	3,356,971	19,190	19,363
1921.....	38,084	23,861	9,761,607	6,116,037	3,350,357	2,099,133	393,092	246,288
1922.....	.....	.....	10,811,903	7,300,305	7,150,937	4,828,384	663,493	447,997
1923.....	33,006	21,412	10,540,943	6,838,226	6,113,327	3,965,899	1,914,438	1,241,953
1924.....	83,814	55,972	11,273,567	7,527,933	8,153,003	5,444,657	-226,755	151,429
Total.....	2,669,913	2,286,001	352,978,411	226,352,221	10,848,870	72,528,092	5,993,340	3,786,811

\*Does not include small productions from New Brunswick, Alberta, and Manitoba in 1917, from Manitoba from 1918 to 1924, and from Nova Scotia in 1923 and 1924.

## QUEBEC

During 1924 the production of silver in Quebec was derived for the greater part from the lead-zinc ores and to a less extent from pyritic ores that were sent out of the country for treatment in foreign smelters. The total credited to the province was 83,814 fine ounces valued at \$55,972.

## ONTARIO

The production of silver in Ontario in 1924 was 11,272,567 fine ounces valued at \$7,527,933 as against 10,540,943 fine ounces valued at \$6,838,226 in 1923. The total for 1924 included (a) 5,577,875 ounces bullion made in the Cobalt district or 49.6 per cent of the total Ontario production; (b) 4,309,595 ounces or 38.2 per cent recovered by the smelters of southern Ontario; and (c) 282,208 ounces or 2.4 per cent contained in gold bullion, and nuggets sold for exhibition purposes and in products from the nickel refineries; the balance of 1,102,889 ounces or 9.8 per cent was recovered from Ontario ores, slags and matte treated in the United States and Europe. The corresponding figures for the year 1923 were (a) 6,278,759 fine ounces or 59.7 per cent; (b) 3,028,458 ounces or 28.7 per cent; (c) 205,610 ounces or 1.9 per cent and (d) 1,028,116 ounces or 9.7 per cent.

As indicated above, practically the whole of Ontario's silver production was derived from the Cobalt ores with small quantities obtained from the products of the nickel refineries and from gold bullion. Recovery during the year from these sources was as follows:—silver contained in gold bullion, 208,562 ounces as against 151,535 ounces in 1923; silver produced by the refineries of the International Nickel Company, the British America Nickel Corporation and the Mond Nickel Company, 122,889 ounces as against 54,075 ounces in 1923.

The following table shows the percentage of production from the Cobalt Camp, from the Ontario smelters, and from ores exported to the United States.

**Table 96.—Percentage of Silver Production Credited to each Group Treating Ontario Ores, 1916-1924**

Group	1916	1917	1918	1919	1920	1921	1922	1923	1924
	%	%	%	%	%	%	%	%	%
Cobalt district.....	39.5	51.1	55.0	48.7	58.6	51.8	74.4	60.8	51.2
Ontario smelters.....	44.7	33.9	29.0	36.4	33.7	41.1	19.3	30.5	39.4
Total for Ontario.....	84.2	85.0	84.0	85.1	92.3	92.9	93.7	91.3	90.6
U.S. smelters.....	15.8	15.0	16.0	14.9	7.7	7.1	6.3	8.7	9.4
<b>Total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

## MANITOBA

Silver production in Manitoba was very small in 1924, there being only about 140 ounces recorded as having been recovered from the gold bullion produced by the Manitoba Metals Corporation, Limited. Copper deposits were developed during the war and from 1918 to 1920 shipments of copper ore containing silver were sent to Trail; in the three years, production from this source amounted to about 50,000 ounces. Owing to the drop in the price of copper and to the high cost of freight rates, practically no shipments of copper ores have been made in recent years.

Table 97.—Production of Silver in Manitoba, 1919-1924

Year	Fine ounces	Value
		\$
1919.....	20,700	23,069
1920.....	15,510	15,649
1921.....	33	20
1922.....	20	14
1923.....	5	3
1924.....	140	93

## BRITISH COLUMBIA

The chief sources of silver in British Columbia have been the silver-lead-zinc ores of the East and West Kootenay Districts supplemented by the silver contained in the gold-copper ores of Rossland and the Boundary and Coast districts. During the last two or three years this production has been remarkably increased by shipments of rich ores from the Premier mine near Stewart.

Production in 1924 amounted to 8,153,003 fine ounces valued at \$5,444,657 as against 6,113,327 fine ounces valued at \$3,965,899 fine ounces in 1923. Production in 1924 included (a) silver contained in blister copper, 848,142 ounces or 10.4 per cent; (b) silver in lead and gold bullion 4,168,464 ounces or 51.3 per cent; (c) silver in lead and zinc ores and concentrates exported 379,254 ounces or 4.6 per cent and (d) silver in gold, silver and copper ores exported, 2,757,143 ounces or 33.7 per cent. Corresponding figures for 1923 were (a) 1,109,905 ounces or 17.9 per cent; (b) 2,782,932 fine ounces or 45.6 per cent; (c) 13,227 ounces or 0.3 per cent; (d) 2,207,263 ounces or 36.2 per cent.

## YUKON TERRITORY

The production of silver from the Yukon Territory in 1924 amounted to 226,755 fine ounces derived chiefly from the silver-lead ores exported. This was a marked falling-off from the previous year when the output amounted to 1,914,438 fine ounces valued at \$1,241,953. Owing to the cold climate, trouble is experienced in the mining of the silver in the Keno Hill district. Ores mined late in one season are hauled down by a tractor and piled on the river banks there to await the spring break-up when they can be taken to the customs smelters in the United States. Because of this severe climatic condition, it is proposed now to build a concentrating plant underground in one of these mines in order to get away from the troubles of running a concentrator in zero weather.

The quantity of silver from placer gold is decreasing. In 1922 it was only 12,233 fine ounces as against 14,831 fine ounces in 1921. In 1923 it amounted to 13,476 fine ounces and in 1924 only 7,853 fine ounces were credited to the placer workings of the Yukon for the whole year.

The following table gives the percentages of recovery from the several sources during the years 1916 to 1924.

Table 98.—Percentage of the Silver Output in the Yukon won from Lode and Placer Mining, 1916-1924

Year	From lode mining	From placer mining
	%	%
1916.....	87.0	13.0
1917.....	66.8	33.2
1918.....	68.2	31.8
1919.....	26.0	74.0
1920.....	14.6	85.4
1921.....	96.2	3.8
1922.....	93.2	1.8
1923.....	99.3	0.7
1924.....	96.5	3.5

Table 99.—Imports into Canada and Exports of Silver, 1922, 1923 and 1924

	1922	1923	1924
	\$	\$	\$
<b>IMPORTS—</b>			
<b>Silver—</b>			
Bullion in bars and blocks.....	657,760	723,040	665,280
Coins.....			1,275
Sterling.....	178,223	234,047	209,430
<b>Manufacture of gold and silver—</b>			
Leaf.....	63,276	81,252	69,495
Sweepings.....	5,471	4,849	5,508
Manufactures, n.o.p.....	89,684	125,582	142,008
Electroplated ware.....	442,593	509,131	604,500
<b>EXPORTS—</b>			
In ore, concentrates, bullion.....	11,684,028	11,137,724	12,082,954

**Prices.**—During 1924, the monthly average New York price for silver varied from 63·447 cents per ounce in January to 64·139 cents per ounce in April up to 70·827 cents, the highest price for the year, reached in October. For the last month of the year the price averaged 68·096 cents per ounce.

In order of importance, the chief silver-producing countries in the world are; Mexico, United States, Canada and Peru. In 1923, these accounted for 82·0 per cent of the total world's production. In all these countries important increases in silver production have been recorded and, except in the United States, all the silver produced has been marketed at current rates. In the United States, production was stimulated by the price of \$1 per ounce, fixed by the Pittman Act. After the purchases during 1922 under this Act, there remained a quantity in the neighbourhood of 60,000,000 ounces still to be purchased. The Pittman Act authorized the Government of the United States to buy back at one dollar per ounce from American producers three hundred and fifty million ounces of silver which had been sold from the treasury vaults at the same price to Great Britain during the war. As these purchases naturally kept the silver produced in the United States from entering the world's markets, the termination of the Act was viewed with some alarm by producers of other countries but close students of the silver market predicted it would have but slight effect and the trend of the market seemed to have proven them right.

Table 100.—Monthly Average Prices of Silver, 1922, 1923 and 1924

From the "Engineering and Mining Journal-Press."

Month	New York (Cents per fine ounce)			London (Pence per standard ounce)		
	1922	1923	1924	1922	1923	1924
January.....	65·450	65·668	63·447	35·035	31·928	33·549
February.....	65·290	64·313	64·359	33·891	30·875	33·565
March.....	64·440	67·556	63·957	33·269	32·310	33·483
April.....	66·575	66·855	64·139	34·080	32·346	33·065
May.....	71·154	67·043	65·524	36·023	32·611	33·870
June.....	71·149	64·861	66·690	35·900	31·611	34·758
July.....	70·245	63·015	67·159	35·644	30·942	34·509
August.....	69·417	62·793	68·519	34·957	30·952	34·213
September.....	69·515	64·203	69·350	35·305	31·698	34·832
October.....	68·015	63·649	70·827	34·498	31·718	35·387
November.....	65·177	63·818	69·299	32·882	32·774	33·775
December.....	63·905	64·705	68·096	31·383	33·375	32·620
<b>Average.....</b>	<b>67·528</b>	<b>64·873</b>	<b>66·781</b>	<b>34·406</b>	<b>31·929</b>	<b>33·969</b>

Table 101.—World's Production<sup>1</sup> of Silver, 1913, 1920-1924(From the 1924 "Year Book of the American Bureau of Metal Statistics,"<sup>2</sup>)

(Fine ounces)

Country	1913	1920	1921	1922	1923	1924
<b>NORTH AMERICA—</b>						
United States.....	66,801,500	55,361,573	53,052,441	56,240,048	66,163,338	64,221,655
Canada.....	31,524,708	13,330,357	13,543,198	18,626,439	18,601,744	20,243,846
Mexico.....	55,486,431	66,516,354	64,465,347	81,076,899	90,810,855	91,437,944
<b>Total North America.....</b>	<b>153,812,639</b>	<b>135,208,284</b>	<b>131,060,986</b>	<b>155,943,386</b>	<b>175,575,937</b>	<b>175,903,445</b>
<b>Central America and West Indies..</b>	<b>2,135,641</b>	<b>2,700,000</b>	<b>2,000,000</b>	<b>2,500,000</b>	<b>3,000,000</b>	<b>3,500,000</b>
<b>SOUTH AMERICA—</b>						
Argentina.....	35,271	30,000	25,000	25,000	30,000	*30,000
Bolivia and Chile.....	3,932,594	4,828,086	5,000,000	8,082,700	8,550,317	9,000,000
Brazil.....	28,364	30,000	33,000	25,720	28,613	30,000
Colombia.....	587,683	480,000	500,000	3,150	3,150	*3,000
Ecuador.....	22,642	35,000	75,000	75,000	75,000	*75,000
Peru.....	9,617,094	9,196,282	9,853,910	13,169,765	18,654,362	18,800,000
Other countries.....	51,111	12,000	13,700	16,850	13,200	*14,000
<b>Total South America.....</b>	<b>14,274,759</b>	<b>14,611,368</b>	<b>15,500,610</b>	<b>21,398,185</b>	<b>27,354,642</b>	<b>27,952,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	2,104,107	13,985	15,000	8,583	14,178	.....
France.....	1,005,266	321,500	392,873	347,220	213,025	.....
Czecho-Slovakia.....	680,069	680,069	703,056	875,187	900,200	.....
Great Britain.....	128,543	76,344	12,229	29,885	34,625	.....
Germany.....	6,182,445	3,305,020	3,387,420	3,615,525	3,667,447	.....
Greece.....	803,750	220,935	192,900	184,123	200,000	.....
Italy.....	423,888	297,452	219,392	215,405	306,582	.....
Norway.....	300,602	323,172	202,115	205,760	297,934	.....
Portugal.....	205,822	.....	96,450	62,821	64,300	.....
Russia.....	.....	50,000	40,000	150,000	192,900	.....
Serbia.....	28,758	15,000	15,946	26,813	24,562	.....
Spain.....	4,031,417	2,956,546	2,679,349	2,778,210	2,842,060	.....
Sweden.....	33,339	22,569	13,342	9,645	15,046	.....
Turkey.....	1,509,133	100,000	100,000	8,037	8,037	.....
<b>Total Europe.....</b>	<b>16,757,070</b>	<b>8,382,592</b>	<b>8,070,072</b>	<b>8,517,214</b>	<b>8,780,896</b>	<b>10,000,000</b>
<b>AUSTRALASIA—</b>						
New South Wales.....	14,504,889	675,332	4,241,890	9,912,927	12,067,954	.....
Queensland.....	604,979	274,235	195,328	273,036	469,302	.....
Victoria.....	16,195	6,231	5,204	6,978	6,304	.....
New Zealand.....	975,616	454,000	454,000	376,000	514,655	.....
Tasmania.....	765,187	623,359	348,658	794,585	638,062	.....
Other states.....	190,680	131,697	117,600	121,208	109,048	.....
<b>Total Australasia.....</b>	<b>17,057,546</b>	<b>2,164,854</b>	<b>5,362,680</b>	<b>11,484,734</b>	<b>13,805,865</b>	<b>11,000,000</b>
<b>ASIA—</b>						
India.....	125,209	2,906,397	3,587,587	4,244,304	4,863,066	5,800,000
China.....	.....	50,000	40,000	100,000	100,000	100,000
Chosen (Korea).....	15,048	1,200	2,953	10,835	39,281	40,000
Dutch East Indies.....	465,980	1,027,956	1,021,994	1,109,657	1,408,973	1,500,000
Japan.....	4,700,390	4,889,540	4,185,504	3,886,301	3,554,750	3,534,943
Other countries.....	51,763	25,179	29,962	23,890	23,437	25,000
<b>Total Asia.....</b>	<b>5,358,390</b>	<b>8,900,272</b>	<b>8,868,005</b>	<b>9,374,987</b>	<b>9,989,507</b>	<b>10,999,943</b>
<b>AFRICA—</b>						
Algeria.....	.....	150,000	.....	.....	.....	.....
Belgian Congo.....	1,454	10,674	5,819	6,550	8,745	9,000
Rhodesia.....	121,537	164,865	161,383	179,399	161,492	168,675
Transvaal, Cape Colony and Natal.....	952,928	892,593	830,329	1,115,676	1,373,930	1,399,626
Other Countries.....	.....	15,116	13,362	13,362	1,000	5,000
<b>Total Africa.....</b>	<b>1,075,919</b>	<b>1,233,248</b>	<b>1,010,893</b>	<b>1,314,996</b>	<b>1,545,167</b>	<b>1,580,301</b>
<b>Grand Total.....</b>	<b>210,471,964</b>	<b>173,200,618</b>	<b>171,873,246</b>	<b>210,533,502</b>	<b>240,052,014</b>	<b>240,935,659</b>

<sup>1</sup>Note—The basis of this table is the information published by the Director of the Mint. However revisions and additions have been made so that the totals do not agree with the Mint figures. For 1924 the figures are based on actual reports or reliable estimates, except where the asterisk is used indicating that the figure is conjectural.

<sup>2</sup> Dominion Bureau of Statistics reports the Canadian production of silver as follows: 1913—31,845,803 fine ounces; 1919—16,020,657 fine ounces; 1920—13,330,357 fine ounces; 1921—13,543,198 fine ounces; 1922—18,626,439 fine ounces; 1923—18,601,744 fine ounces, and 1924—19,736,323 fine ounces.

## TIN

Tin ores have not yet been found in sufficient quantities in Canada to be of economic importance.

The occurrence of tin ore has been reported from several localities, the most important perhaps being the discovery of cassiterite, near New Ross, Lunenburg county, N.S. Reports upon it may be found in the Summary Reports of the Geological Survey Branch of the Department of Mines for 1907, 1908, 1910, 1911, and 1912.

Cassiterite occurs in a few scattered crystals in pegmatite dykes in the drainage basin of McDougal creek, Lardeau division, B.C., and it has been found also in black sands in the Atlin district, B.C., and in the alluvial sands of Dublin gulch, Mayo district, Y.T.

The occurrence of tin has been noted in some bodies of sulphide minerals found in the vicinity of West Hawk and Star lakes, near the boundary line between Ontario and Manitoba. Attention is called to these occurrences not on account of their commercial importance, but for the interesting manner of occurrence and the mineral associations.

Ores of tin were formerly imported from South America and reduced in Canada by the Electro Tin Products Company of Brantford, Ontario. The plant consisted of roasting furnaces, electric smelting and slag-cleaning furnaces.

Table 102.—Imports of Tin into Canada 1922, 1923 and 1924.

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
Tin in blocks, pigs and bars.....	3,681,800	1,165,532	4,220,100	1,746,720	4,003,600	1,971,035
Tin foil,.....	2,110,215	467,246	1,296,143	377,073	1,318,168	402,370
Strip waste.....	11,875	247	12,577	370	49,973	74
Collapsible tubes.....		22,903		18,880		19,844
Tinware, etc. (a).....		435,807		536,488		626,846
Tin, crystals.....		(b)		(b)		(b)
Bichloride of tin.....	36,258	9,143	138,238	19,790	90,749	23,060
<b>Total.....</b>		<b>2,150,878</b>		<b>2,699,321</b>		<b>3,043,229</b>

(a) Tinware, plain, japanned or lithographed, and all manufactures of tin, n.e.s.

(b) Included with "Bichloride of Tin."

## ZINC

The production of zinc during 1924 totalled 98,909,077 pounds which at the average St. Louis price for the year of 6.344 cents per pound was worth \$6,274,791 as against 60,416,240 pounds valued at \$3,991,701 in 1923 or 6.607 cents per pound. The increase amounted to 63.7 per cent in quantity and 57.1 per cent in value.

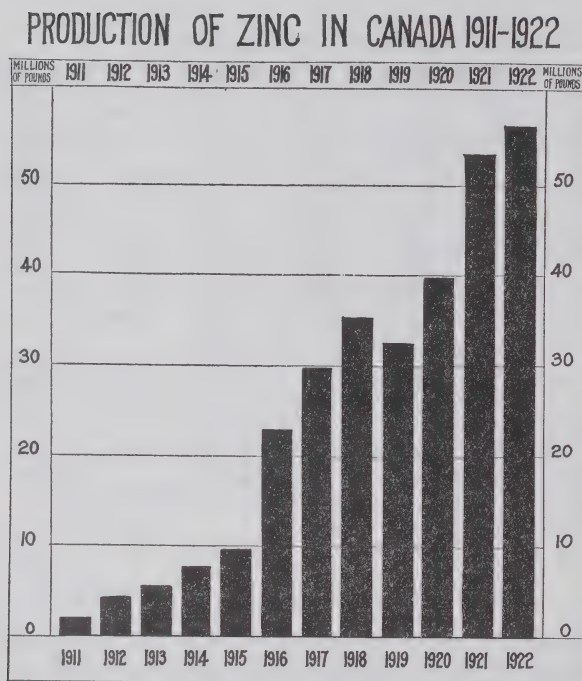
In 1924, production included 54,888,000 pounds of fine zinc produced at Trail, B.C.; 2,909,008 pounds estimated as recoverable from the zinc-lead-ores exported from Quebec, and 41,112,069 pounds estimated as recoverable from ores and concentrates shipped from British Columbia. The major part of the total Canadian production was credited to the Sullivan mine of Kimberly, B.C., owned and operated by the Consolidated Mining and Smelting Company at Trail, B.C. Ores on this property, although known for some time, were very complex in nature and it took several years of research by the Consolidated Mining Company of Trail to perfect a process whereby the zinc and lead could be separated economically into their respective concentrates. About two years ago the result of these researches satisfied the management and it was decided to build a concentrator at Kimberly. As a result of all this preliminary work, progress has been highly satisfactory and the production of the concentrator has exceeded expectations.

Production has over-taxed the refinery capacity of the Trail smelter so that large quantities of zinc concentrates had to be exported for treatment. Since that time the Trail smelter and refinery capacity have been enlarged to handle this increased output and it is expected that before the close of 1925 it will be possible to take care of the total output from Kimberly concentrator in the smelter at Trail.

The increase in the price of zinc caused by the fear of shortage and also by the increase in demands from European smelters has put Canada in a very enviable position with regard to the zinc market.

The lead mine of Galetta, Ontario, produced some zinc concentrates which will be sold for export to Belgium in 1925. The Sterling zinc mine situated on Cape Breton Island is being developed by a large American company. The silver-lead-zinc property at Notre Dame des Anges, Quebec, is also a source of some commercial zinc. Old dumps have been worked over and concentrates have been made and exported with the result that during 1924, recoveries from this district totalled about 3 million pounds. This was an increase of over 2·5 million pounds over the amount recorded in 1923.

**Table 103.—Production of Zinc in Canada, 1911-1924**



Year	*Pounds	Total Value	Average price per pound
		\$	Cents
1911.....	1,877,479	108,105	5.758
1912.....	4,283,760	297,421	6.943
1913.....	5,640,195	318,558	5.648
1914.....	7,246,063	377,737	5.213
1915.....	9,771,651	1,292,789	13.230
1916.....	23,364,760	2,991,623	12.804
1917.....	29,668,764	2,640,817	8.901
1918.....	35,083,175	2,862,436	8.159
1919.....	32,194,707	2,362,448	7.338
1920.....	39,863,912	3,057,961	7.671
1921.....	53,089,356	2,471,310	4.655
1922.....	56,290,000	3,217,536	5.716
1923.....	60,416,240	3,991,701	6.607
1924.....	98,909,077	6,274,791	6.344

\*Estimated smelter recoveries, including for years 1916 to 1924 the actual zinc recovered at Trail, B.C.

**Table 104.—Production of Refined Zinc at Trail, B.C., 1916-1924**

Year	Short tons
1916.....	2,974
1917.....	9,985
1918.....	12,574
1919.....	12,326
1920.....	18,517
1921.....	26,494
1922.....	28,145
1923.....	30,025
1924.....	27,444

**Imports and Exports.**—In 1920, imports of zinc and zinc products into Canada reached a total value of \$2,555,166; in the following year the value dropped to \$1,309,272 but in 1922 it rose again to \$1,839,373. In each of the past two years the value of zinc and its products imported has shown a decrease; in 1923, the value was \$1,716,741 and in 1924 it stood at \$1,656,088. The exports of zinc ore during 1924 showed a large increase over the previous year, but the exports of spelter remained practically the same as in 1923.

Table 105.—Imports into Canada and Exports of Zinc and Brass, 1922, 1923 and 1924

	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
<b>IMPORTS</b>		\$		\$		\$
<b>Zinc and Zinc Products—</b>						
Zinc, in blocks, pigs and sheets.....	3,897,090	299,995	3,201,082	288,128	3,073,644	259,847
Zinc, as spelter.....	1,060,283	67,737	685,356	54,408	1,230,251	84,486
Zinc white (80% Zn.).....	22,065,276	1,338,568	18,976,437	1,206,560	16,264,059	1,063,370
Zinc dust (90% Zn.).....	313,652	27,390	394,378	41,167	359,219	30,668
Zinc, sulphate and chloride of (44% Zn.)..	586,050	27,285	601,630	21,991	941,039	41,153
Zinc, manufactures of.....		78,398		104,487		176,564
<b>Total.....</b>		<b>1,839,373</b>		<b>1,716,741</b>		<b>1,656,088</b>
<b>Brass and Brass Products—</b>						
Brass, in blocks, pigs and ingots(30% Zn.)..	185,400	21,671	125,500	17,418	313,200	38,291
Brass, old and scrap (30% Zn.).....	2,200,000	221,378	1,724,600	177,198	3,032,430	372,307
Brass, tubing (30% Zn.).....	1,410,141	321,074	1,714,819	474,279	1,699,613	396,074
Brass, plain wire (30% Zn.).....	551,081	117,496	495,444	132,635	424,525	99,332
Brass, bars and rods.....	1,842,900	268,689	1,260,700	235,005	727,800	115,231
Brass, strips, sheets or plates.....	1,515,300	276,361	1,588,100	330,014	815,100	162,493
Brass, wire cloth, n.o.p.....		317,290		246,126		154,796
Brass, cup for manufacture of shells....		63,281		125,417		119,903
Brass, caps for electric batteries.....		4,743		5,097		12,870
Brass, hand-pumps.....		28,091		21,394		16,970
Brass, nails, tacks, etc.....		2,666		2,248		3,467
Brass and copper rivets, burrs and washers..		27,716		24,203		26,634
Brass, valves.....		164,014		226,485		159,187
Brass, other manufactures, n.o.p.....		1,722,345		2,075,433		1,828,039
Carburetors of brass.....		278,002		344,188		237,482
<b>Total.....</b>		<b>3,834,817</b>		<b>4,437,138</b>		<b>3,643,166</b>
<b>EXPORTS</b>	Tons		Tons		Tons	
<b>Zinc—</b>						
Ore.....	40	1,095	531	5,310	63,931	1,626,031
Spelter.....	28,518	3,054,644	19,258	2,513,763	20,016	2,519,755
<b>Total.....</b>		<b>3,055,739</b>		<b>2,519,073</b>		<b>4,145,786</b>
<b>Brass—</b>	Pounds		Pounds		Pounds	
Old and scrap.....	6,726,500	459,846	6,760,100	563,730	6,000,700	429,704
Rods, sheets and tubing.....	400	74	1,000	302	5,800	1,134
Valves.....		150,953		190,060		177,883
Mfrs. of brass, n.o.p.....		38,753		49,633		54,837
<b>Total.....</b>		<b>649,626</b>		<b>803,725</b>		<b>663,558</b>

**Prices.**—The price of zinc on the St. Louis market in 1924 averaged 6.344 cents per pound as against 6.607 cents in 1923. The highest quotation during 1924 was in the month of December when 7.374 cents was reached, and the lowest was in the month of June when the figure stood at 5.792 cents. The Canadian market is centred in Montreal and Toronto to which points The Consolidated Mining and Smelting Company is the most important shipper. The average yearly Montreal quotation for zinc was 7.873 cents per pound and the fluctuations corresponded closely to prices changes in the United States markets.

Table 106.—Monthly Average Prices of Zinc (Spelter), 1922, 1923 and 1924

Month	(a) Montreal (In cents per pound)			(b) St. Louis (In cents per pound)			Ordinary Brands, in London, (Per long ton)		
	1922	1923	1924	1922	1923	1924	1922	1923	1924
							£ s. d.	£ s. d.	£ s. d.
January.....	6-472	8-544	8-024	4-691	6-815	6-426	26 6 5	35 14 8	34 15 3
February.....	6-211	8-840	8-38	4-485	7-152	6-756	24 4 3	35 12 3	36 10 4
March.....	6-288	9-412	8-162	4-658	7-706	6-488	25 9 4	36 14 5	35 5 11
April.....	6-531	8-879	7-72	4-906	7-197	6-121	26 11 6	34 5 6	32 11 9
May.....	6-691	8-013	7-33	5-110	6-625	5-793	27 6 0	31 1 2	30 12 11
June.....	6-906	7-650	7-30	5-346	6-031	5-792	27 17 10	29 10 11	31 15 9
July.....	7-274	7-740	7-40	5-694	6-089	5-898	29 0 10	29 6 8	32 3 10
August.....	7-734	8-086	7-64	6-212	6-325	6-175	31 3 4	32 7 8	32 10 10
September.....	7-864	8-190	7-65	6-548	6-438	6-181	31 15 0	33 9 4	32 18 6
October.....	7-274	7-992	7-79	6-840	6-293	6-324	34 10 6	32 19 11	33 10 3
November.....	8-639	8-014	8-25	7-104	6-347	6-796	38 0 2	32 18 11	35 0 5
December.....	8-637	7-850	8-84	6-999	6-260	7-374	37 15 1	32 12 2	36 18 8
Average.....	7-210	8-267	7-873	5-716	6-607	6-344	30 0 0	33 1 2	33 14 7

(a) Supplied by Consolidated Mining and Smelting Co. of Canada, Trail, B.C.

(b) Quoted from the "Engineering and Mining Journal-Press."

Table 107.—World's Production of Zinc, 1913, 1920-1924

(From the 1924 "Year Book of the American Bureau of Metal Statistics,".)

(Short tons)

Country	1913	1920	1921	1922	1923	1924
United States.....	352,952	479,669	215,614	373,678	531,202	535,846
Canada(1).....		18,508	26,494	27,782	30,025	27,443
Belgium.....	225,050	92,880	72,917	123,777	162,082	179,662
France.....	74,815	22,140	26,840	43,779	54,381	61,287
Germany (including Silesia).....	307,238	107,435	99,207	121,705	127,892	130,190
Great Britain.....	73,000	27,550	6,515	20,529	35,033	43,098
Italy.....		1,297	427	2,901	4,060	6,585
Austria-Hungary.....	23,921					
Jugo-Slavia and Czecho-Slovakia.....		6,612	6,614	9,921	11,023	11,023
Netherlands.....	26,804	2,238	7,060	14,327	18,126	20,051
Norway.....	10,234	2,024	2,205	2,039	2,205	2,205
Poland (excluding Silesia).....	8,398	5,909	7,745	10,031	13,546	17,050
Spain.....	3,650	10,634	7,427	6,910	12,039	13,558
Sweden.....	2,204	6,458	3,858	1,757	1,470	3,858
Australia.....	4,614	10,825	1,883	26,339	46,091	52,205
Japan.....	992	17,356	11,435	13,637	15,432	15,432
Total.....	1,113,872	811,535	496,041	799,112	1,064,557	1,119,493

<sup>1</sup> Dominion Bureau of Statistics reports the Canadian production of Zinc in Canada as follows: 1913—2,820 tons; 1920—19,932 tons; 1921—26,545 tons; 1922—28,145 tons; 1923—30,208 tons; 1924—49,455 tons.

## NON-METALLICS

## ABRASIVES

**Corundum.**—No production of corundum in Canada was reported during the year 1924. Corundum is found in an area embracing several townships in Renfrew and Hastings counties in the province of Ontario. The industry made its appearance there in 1900, production reaching a maximum of 2,914 tons in 1906. From 1907 to 1913, although the yearly production was smaller, it remained fairly constant. In August, 1918, operations were indefinitely suspended, but during the years 1919, 1920 and 1921 old tailings were treated for the recovery of grain corundum. In 1921, grain corundum amounting to 403 tons valued at \$55,965, was exported to the United States, but no shipments have been reported since that time.

Imports into Canada of grindstones, burrstones, emery and other abrasive materials amounted in value to \$1,175,641 in 1924. Exports during the same year were valued at \$2,666,405; the greater part of this sum represented sales of the artificial abrasive, carborundum. Grindstones and stones for the manufacture of grindstones exported, were valued at about \$50,000; natural abrasives, \$15,000; and artificial abrasives, made up into wheels, stones, etc., totalled \$13,000 in value. There was also an item of 2 tons of corundum valued at \$251 exported, but no report has been received advising as to whether this amount was mined or not.

Table 108.—Production of Corundum in Canada, 1900-1924

(Short tons)

Year	Corundum-bearing rock treated	Grain corundum graded	Per cent recovery	Shipments of grain corundum				Average price in cents per pound
				Sold in Canada	Exported	Total shipments	Total value	
	Tons	Tons		Tons	Tons	Tons	\$	
1900.....		60	.....	3	.....	3	300	5-00
1901.....	4,134	434	10-7	85	302	387	46,415	5-97
1902.....	7,996	805	10-1	106	662	768	84,465	5-49
1903.....	(a) 8,877	839	9-5	85	618	703	77,510	5-51
1904.....	28,187	1,654	5-9	116	877	993	109,545	5-51
1905.....	23,571	1,681	7-1	140	1,504	1,644	149,153	4-48
1906.....	45,719	2,914	6-4	162	2,112	2,274	204,973	4-50
1907.....	60,532	2,682	4-4	164	1,728	1,892	177,922	4-70
1908.....	2,678	106	4-0	99	990	1,089	100,398	4-60
1909.....	35,894	1,579	4-4	129	1,362	1,491	162,492	5-45
1910.....	37,183	1,686	4-5	106	1,764	1,870	198,680	5-31
1911.....	41,975	1,641	3-9	92	1,380	1,472	161,873	5-50
1912.....	36,879	1,620	4-4	63	1,897	1,960	239,091	6-10
1913.....	12,290	763	6-2	23	1,154	1,177	137,036	5-82
1914.....	12,111	695	5-7	14	534	548	72,176	6-59
1915.....	1,724	116	6-7	21	241	262	33,138	6-33
1916.....	1,864	67	3-6	8	59	67	10,307	7-65
1917.....	4,659	188	4-0	16	172	188	32,153	8-55
1918.....	3,184	137	4-3	.....	137	137	26,112	9-90
1919.....	1,300	26	2-0	.....	.....	.....	.....	.....
1920.....	(b) 13,025	322	2-5	20	176	196	24,547	6-25
1921.....	(b) 11,256	407	3-6	.....	403	403	55,965	6-94
1922-1924.....	.....	.....	.....	.....	.....	.....	.....	.....
<b>Total.....</b>	<b>395,038</b>	<b>20,422</b>	<b>.....</b>	<b>1,452</b>	<b>18,072</b>	<b>19,524</b>	<b>2,104,251</b>	<b>.....</b>

(a) In addition to this amount which was milled in Canada, 267 tons of ore was mined and shipped to the United States for treatment there.

(b) Tailings only.

**Garnets.**—The production of garnets during 1924 amounted to 360 tons, with a value of \$7,200, as compared with a production of 1,250 tons valued at \$100,000 in 1923. The product was shipped to Niagara Falls, N.Y., for use as an abrasive material.

**Grindstones, Pulpstones and Scythestones.**—The production of grindstones, pulpstones and scythestones in Canada in 1924 amounted to 2,691 tons valued at \$130,824 as compared with the 1923 production of 2,014 tons valued at \$80,083. Of the year's shipments, Nova Scotia contributed 338 tons valued at \$12,525; the production in New Brunswick amounted to 2,113 tons valued at \$99,299, and British Columbia reported 240 tons valued at \$19,000.

Table 109.—Production of Grindstones, Pulpstones and Scythestones, in Canada, 1922, 1923 and 1924

Province	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Nova Scotia.....	102	3,692	256	7,906	338	12,525
New Brunswick.....	903	40,050	1,758	72,177	2,113	99,299
British Columbia.....					240	19,000
<b>Total.....</b>	<b>1,005</b>	<b>43,742</b>	<b>2,014</b>	<b>80,083</b>	<b>2,691</b>	<b>130,824</b>

Table 110.—Production of Grindstones, etc., in Canada, 1886-1924

Year	Tons	Value	Year	Tons	Value
		\$			\$
1886.....	4,020	46,545	1906.....	5,363	59,814
1887.....	5,292	64,008	1907.....	5,414	60,376
1888.....	5,764	51,129	1908.....	3,843	48,128
1889.....	3,404	30,863	1909.....	4,275	54,664
1890.....	4,884	42,340	1910.....	3,973	47,196
1891.....	4,479	42,587	1911.....	4,566	52,942
1892.....	5,283	51,187	1912.....	4,412	52,090
1893.....	4,600	38,379	1913.....	4,837	51,325
1894.....	3,757	32,717	1914.....	3,976	54,504
1895.....	3,475	31,932	1915.....	2,580	35,768
1896.....	3,713	33,310	1916.....	3,478	52,782
1897.....	4,572	42,340	1917.....	2,523	45,754
1898.....	4,935	44,775	1918.....	3,072	83,005
1899.....	4,511	43,265	1919.....	2,020	60,516
1900.....	5,539	53,450	1920.....	2,444	83,136
1901.....	4,581	45,690	1921.....	1,281	64,067
1902.....	4,633	44,118	1922.....	1,005	43,742
1903.....	5,538	48,302	1923.....	2,014	80,083
1904.....	4,649	42,782	1924.....	2,691	130,824
1905.....	5,540	62,375			
			<b>Total.....</b>	<b>156,936</b>	<b>2,057,810</b>

**Tripolite.**—Shipments of tripolite in 1924 amounted to 33 tons valued at \$838, as against the 1923 production of 130 tons valued at \$3,250.

Tripolite is a silicious material closely related to quartz and is used extensively as an abrasive. It is usually given a preliminary calcine in rotary furnaces before shipment. The entire Canadian production is derived from a deposit of this commodity at Silica Lake, Colchester County, Nova Scotia.

In 1924, for the first time, production of volcanic ash from the province of Saskatchewan was reported. This amounted to 245 tons valued at \$1,103.

Table 111.—Production of Tripolite in Canada, 1896-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1896.....	644	9,960	1906.....			1916.....	620	12,139
1897.....	15	150	1907.....	30	225	1917.....	600	18,000
1898.....	1,017	16,660	1908.....	30	195	1918.....	500	12,500
1899.....	1,000	15,000	1909.....			1919.....	565	11,300
1900.....	336	1,950	1910.....	22	134	1920.....	260	8,600
1901.....	850	15,300	1911.....	20	122	1921.....	341	11,268
1902.....	1,052	16,470	1912.....	38	230	1922.....	219	5,781
1903.....	855	16,700	1913.....	620	12,138	1923.....	130	3,250
1904.....	320	6,400	1914.....	650	13,000	1924.....	33	838
1905.....	300	3,600	1915.....	317	12,119			
						<b>Total.....</b>	<b>11,364</b>	<b>224,029</b>

Table 112.—Imports into Canada and Exports of Abrasives, 1922, 1923 and 1924

	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Grindstones.....		319,941		482,340		593,670
Burrstones in blocks, etc.....No.	400	910	519	6,908	145	791
Emery in bulk, crushed or ground.....		41,943		57,267		53,208
Emery and carborundum wheels and manu- factures.....		209,356		151,065		76,971
Pumice and pumice stone ground.....		26,405		28,222		28,127
Iron sand or globules for polishing and saw- ing.....		11,820		20,855		17,985
Sandpaper, emery paper, etc.....		270,231		293,965		279,586
Artificial abrasives.....		163,542		243,408		125,303
<b>Total.....</b>		<b>1,044,148</b>		<b>1,284,030</b>		<b>1,175,641</b>
<b>EXPORTS—</b>						
Grindstones, manufactured.....		17,018		37,101		49,630
Stone for the manufacture of grind- stones.....Tons			170	1,190	120	1,080
<b>Abrasives—</b>						
Natural, n.o.p.....Cwt.	52,752	128,934	47,710	115,342	8,042	15,081
Artificial, crude, including carbor- undum.....Cwt.	266,526	1,299,818	887,343	2,819,558	790,983	2,587,350
Artificial, made up into wheels, stones, etc.....		14,650		27,127		13,264
<b>Total.....</b>		<b>1,460,420</b>		<b>3,000,318</b>		<b>2,666,405</b>

## ACTINOLITE

Production of actinolite in 1924 amounted to 90 tons valued at \$1,225 as against a total in 1923 of 53 tons worth \$583. Production of Canadian actinolite has been confined to the townships of Kaladar and Elzevir in the counties of Hastings and Addington, in the province of Ontario. This mineral is used as an ingredient in coal-tar roofing compounds; great care is taken in the grinding so that the fibre will not be destroyed.

Table 113.—Production of Actinolite in Canada, 1897-1924

Year	Tons	Value	Year	Tons	Value
		\$			\$
1897.....	205	1,845	1915.....	220	2,420
1898-1900.....			1916.....	250	2,750
1901.....	521	3,126	1917.....	120	1,320
1902.....	550	4,400	1918.....	228	2,508
1903.....	550	3,108	1919.....	80	880
1904-1909.....			1920.....	100	1,160
1910.....	30	330	1921.....	78	975
1911.....	67	736	1922.....	50	575
1912.....	92	1,000	1923.....	53	583
1913.....	66	720	1924.....	90	1,225
1914.....	119	1,304			
			<b>Total.....</b>	<b>3,469</b>	<b>30,965</b>

## ASBESTOS

The production of asbestos in 1924 amounted to 225,744 tons valued at \$6,710,830 as against 231,482 tons valued at \$7,522,506 for 1923. Although this marked a decrease of 2.5 per cent in quantity and 10.7 per cent in value, the production of asbestos in Canada in 1924 was the second greatest ever recorded. The average value per ton received by the operators was \$29.73, while in 1923 receipts averaged \$32.50.

Asbestos rock mined during the year amounted to 3,323,505 tons. In the same period the mills handled 2,760,470 tons or 83 per cent of the tonnage raised, and produced 226,469 tons of marketable asbestos or 8 per cent of the mill in-put.

Exports of asbestos other than sand and waste decreased 27,821 tons in 1924 to a total of 109,730 tons and the exports of sand and waste increased approximately 17,000 tons to 95,019 tons. The decrease in export of the former grade was no doubt due to the consumption of this material at the new asbestos manufacturing plant located at Asbestos, Quebec.

Lower prices also prevailed for Rhodesian asbestos in 1924 as the quantity produced during the year was about 6,000 tons higher than in 1923, while the total value decreased 3.7 per cent.

**Table 114.—Production of Asbestos in Canada, 1880-1924**

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1880*	380	24,700	1903	41,677	929,757
1881*	540	35,100	1904	48,465	1,226,352
1882*	810	52,650	1905	68,263	1,503,259
1883*	955	68,750	1906	82,185	2,060,143
1884*	1,141	75,097	1907	90,426	2,505,042
1885*	2,440	142,441	1908	90,773	2,573,335
1886*	3,458	206,251	1909	87,300	2,301,775
1887	4,619	226,976	1910	102,215	2,573,603
1888	4,404	255,007	1911	127,414	2,943,108
1889	6,113	426,554	1912	136,301	3,137,279
1890	9,860	1,260,240	1913	161,086	3,849,925
1891	9,279	999,878	1914	117,573	2,909,806
1892	6,082	390,462	1915	136,842	3,574,985
1893	6,331	310,156	1916	154,149	5,228,869
1894	7,630	420,825	1917	153,781	7,230,383
1895	8,756	368,175	1918	158,259	8,970,797
1896	12,250	429,856	1919	159,236	10,975,369
1897	30,442	445,368	1920	199,573	14,792,201
1898	23,785	491,197	1921	92,761	4,906,230
1899	25,536	485,849	1922	163,706	5,552,723
1900	29,141	748,431	1923	231,482	7,522,506
1901	40,217	1,259,759	1924	225,744	6,710,830
1902	40,416	1,148,319			
			<b>Total</b> .....	<b>3,103,796</b>	<b>114,250,318</b>

\* Exports.

**Table 115.—Output and Sales of Asbestos in Canada, 1923 and 1924**

Classification	1923				1924			
	Total output	Sold or shipped			Total output	Sold or shipped		
		Quantity	Total sales value	Average value		Quantity	Total sales value	Average value
			at mill	per ton			at mill	per ton
	Tons	Tons	\$	\$	Tons	Tons	\$	\$
Crude No. 1.....	1,029	603	275,101	456.22	995	980	403,304	411.54
Crude No. 2.....	3,066	3,246	794,834	244.86	2,805	3,808	762,166	200.15
Fiberized crude.....	220	5	1,306	261.20	190	71	12,080	170.14
Spinning stocks.....	10,439	11,708	1,456,904	124.44	8,623	10,205	1,112,796	109.04
Shingle stocks.....	28,861	25,533	1,215,892	47.62	15,734	19,292	903,775	46.85
Mill board stocks.....	6,549	7,268	189,200	26.03	12,667	11,753	355,772	30.27
Paper stocks.....	62,702	69,743	2,292,804	32.87	60,615	58,634	1,852,926	31.60
Paper fillers.....	67,791	62,689	980,964	15.65	64,866	61,451	914,931	14.88
By-products (asbestos sand, finish, floats).....	56,002	50,687	315,501	6.22	59,074	59,550	393,080	6.60
<b>Total</b> .....	<b>236,659</b>	<b>231,482</b>	<b>7,522,506</b>	<b>32.50</b>	<b>226,469</b>	<b>225,744</b>	<b>6,710,830</b>	<b>29.73</b>

Table 116.—Exports of Canadian Asbestos by Countries of Destination, 1922, 1923 and 1924

Commodity and Destination	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>ASBESTOS—</b>						
Great Britain.....	2,334	271,298	3,459	215,934	6,614	374,680
United States.....	83,562	3,961,811	109,025	5,596,569	72,233	3,904,161
Australia.....	25	6,000	180	9,900	473	24,130
Austria.....			400	30,000		
Belgium.....	4,853	343,491	7,223	411,250	2,798	150,065
France.....	3,080	282,222	5,016	409,410	5,640	452,151
Germany.....	6,867	779,808	6,289	575,211	9,133	785,703
Italy.....	416	32,566	505	52,882	2,439	151,778
Japan.....	2,770	159,870	4,936	287,521	9,222	358,596
Netherlands.....	987	142,499	353	28,275	1,068	89,580
Spain.....	50	4,500				
Other countries.....	170	9,505	165	11,825	110	7,975
<b>Total.....</b>	<b>105,114</b>	<b>5,993,570</b>	<b>137,551</b>	<b>7,628,777</b>	<b>109,730</b>	<b>6,297,819</b>
<b>SAND AND WASTE—</b>						
Great Britain.....	139	1,689	1,174	18,925	3,100	53,983
United States.....	56,266	554,514	75,540	892,360	89,582	1,123,231
Other countries.....	480	6,020	1,237	19,960	2,337	42,056
<b>Total.....</b>	<b>56,885</b>	<b>562,223</b>	<b>77,951</b>	<b>931,245</b>	<b>95,019</b>	<b>1,219,270</b>
<b>ASBESTOS MANUFACTURES INCLUDING ASBESTOS ROOFING—</b>						
Great Britain.....		10,184		2,054		1,007
United States.....		74,430		61,160		30,972
British South Africa.....		821				
France.....				2,631		32
Morocco.....						
New Zealand.....		249		193		125
Other countries.....		10,142		6,460		12,696
<b>Total.....</b>		<b>95,826</b>		<b>72,498</b>		<b>44,132</b>

Table 117.—World's Production of Asbestos, 1913, 1920-1924

(Long tons)

Country	1913	1920	1921	1922	1923	1924
Canada <sup>1</sup> .....	118,361	178,190	82,822	146,166	206,680	201,557
Southern Rhodesia <sup>2</sup> .....	259	16,806	17,437	12,722	18,182	23,339
Union of South Africa <sup>2</sup> .....	859	6,147	4,810	3,919	7,312	6,459
Australia <sup>2</sup> .....		825	1,182	741	217	
Cyprus <sup>2</sup> .....	(a) 1,168	(a) 896	(a) 897	2,285	2,151	3,903
India <sup>2</sup> .....		1,818	316	242	247	
New Zealand <sup>2</sup> .....		2			6,956	
China <sup>2</sup> .....		5	13	(a) 194	(a) 6,956	
Finland.....		252	750	*	*	
Germany <sup>2</sup> .....		28	*	*	*	
Italy <sup>4</sup> .....	172	163	413	492	1,513	
Philippine Islands <sup>2</sup> .....					*	
Russia <sup>2</sup> .....	17,218	1,454	7,080	5,065	4,801	
Spain <sup>2</sup> .....			19	5	*	
United States <sup>3</sup> .....	982	1,471	742	60	277	(*) 300
France <sup>2</sup> .....		438	500	*	*	*
Japan.....			*	919	*	*
<b>Total.....</b>	<b>139,019</b>	<b>208,495</b>	<b>116,981</b>	<b>172,819</b>	<b>248,336</b>	<b>235,558</b>

\*Data not available.

Source—

<sup>1</sup>Dominion Bureau of Statistics, Canada.<sup>2</sup>Imperial Mineral Resources Bureau (to 1921). Later figures from official reports of the different countries.<sup>3</sup>Mineral Resources of United States, 1923.<sup>4</sup>Asbestos.<sup>5</sup>The Mineral Industry, 1924

(a) Exports.

## BARYTES

The production of barytes in 1924 decreased quite considerably from the 1923 output. In 1924 the production amounted to 151 tons valued at \$3,308 as compared with 409 tons valued at \$8,548 in 1923. The total production came from the Johnston mine, Lake Ainslie, Inverness county, Nova Scotia, and was shipped to Montreal for use in paint manufacture.

Table 118.—Production of Barytes in Canada, 1885-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1885.....	300	1,500	1899.....	720	4,402	1913.....	641	5,410
1886.....	3,864	19,270	1900.....	1,337	7,605	1914.....	612	6,169
1887.....	400	2,400	1901.....	653	3,842	1915.....	550	6,875
1888.....	1,100	3,850	1902.....	1,096	3,957	1916.....	1,368	19,393
1889.....			1903.....	1,163	3,931	1917.....	3,490	54,027
1890.....	1,842	7,543	1904.....	1,382	3,702	1918.....	640	10,165
1891.....			1905.....	3,360	7,500	1919.....	468	8,154
1892.....	315	1,260	1906.....	4,000	12,000	1920.....	751	22,983
1893.....			1907.....	1,344	3,000	1921.....	270	9,567
1894.....	1,081	2,830	1908.....	4,312	19,021	1922.....	289	9,537
1895.....			1909.....	179	1,120	1923.....	409	8,548
1896.....	145	715	1910.....			1924.....	151	3,308
1897.....	571	3,060	1911.....	50	400			
1898.....	1,125	5,533	1912.....	464	5,104	<b>Total.....</b>	<b>40,442</b>	<b>287,681</b>

Table 119.—Production in Canada and Imports of Barytes, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
<b>PRODUCTION.....</b>	<b>289</b>	<b>9,537</b>	<b>409</b>	<b>8,548</b>	<b>151</b>	<b>3,308</b>
<b>IMPORTS—</b>						
Barium peroxide.....	82	26,033	60	16,495	37	11,883
Blanc fixe and satin white.....	2,549	88,541	1,946	68,502	354	21,742
Barytes.....	2,954	64,186	2,420	53,670	2,323	48,693

Production of bituminous sands in Canada has not yet been established on a commercial scale; practically all material shipped to date has been used for demonstration and experimental purposes. Deposits are located in the Fort McMurray district of the province of Alberta. The Scientific and Industrial Research Council of Alberta, the McMurray Asphaltum and Oil, Limited, and the Federal Mines Department were actively engaged in research work in connection with these sands. Shipments to date have amounted to 531 tons valued at \$2,127.

### COAL

The production of coal from Canadian mines in 1924 dropped off 3.35 million tons from that in 1923, the total for the year being 13,638,197 short tons. In spite of a loss of 1,040,397 tons as compared with the tonnage for 1923, Nova Scotia, with an output of 5,557,441 tons recovered the premier position among the coal-producing provinces, while Alberta, which in 1923 produced 6,854,397 tons of coal, reported an output of 5,189,729 tons in 1924. British Columbia, third in output tonnage but amongst the leaders in the export of coal, more nearly maintained its position, producing 2,193,667 tons in 1924, as compared with 2,823,306 tons in 1923. By classes, the output of coal included: 9,483,732 tons of bituminous coal, 590,168 tons of sub-bituminous and 3,564,297 tons of lignite.

The value of the coal output in 1924 amounted to \$53,593,988 or an average of \$3.93 per ton as against \$72,058,986 or an average value per ton of \$4.24 in 1923.

Employment in the coal-mining industry remained uncertain. During the months from April to September the number of men employed dropped to a low level. Labour troubles in District 18, in which some of the principal coal mines of British Columbia and Alberta are located, greatly reduced the output from these mines. Seven coal mine strikes in the East occurred during the year. In these 12,691 men were involved, with a total loss of time amounting to 318,993 working days. In western Canada there were 8 disputes and while only 8,523 men were affected, the total loss of time amounted to 1,236,112 working days. In all there were 15 strikes in which 21,214 men participated, losing in the aggregate 1,555,105 working days. In

the preceding year, while there were 25 disputes, only 20,986 men were affected and the total loss in working time amounted to only 308,430 days. In 1922 the trend in employment in coal mining was much the same as in 1924, the loss of time due to strikes in that year amounting to 1,222,288 days.

To assist the industry, the Dominion Government made provision for the payment of a subvention of \$150,000 in order that domestic coal might be marketed in central Canada. Depression in the iron and steel industry, the principal mainstay of the eastern Canadian coal mines, was a check to production.

**Table 120.—Output of Coal from Canadian Mines, 1785–1924**

Year	Short tons	Value	Average per ton	Year	Short tons	Value	Average per ton
		\$	\$			\$	\$
1785-1880.....	16,426,253	28,190,518	1.72	1903.....	7,960,364	15,942,833	2.00
1881.....	1,537,106	2,688,621	1.75	1904.....	8,254,595	16,592,231	2.01
1882.....	1,848,148	3,248,446	1.76	1905.....	8,667,948	17,520,263	2.02
1883.....	1,818,684	3,109,635	1.71	1906.....	9,762,601	19,732,019	2.02
1884.....	1,984,959	3,593,831	1.81	1907.....	10,511,426	24,381,842	2.32
1885.....	1,920,977	3,417,807	1.78	1908.....	10,886,311	25,194,573	2.31
1886.....	2,116,653	3,739,840	1.77	1909.....	10,501,475	24,781,236	2.36
1887.....	2,429,330	4,388,206	1.81	1910.....	12,909,152	30,909,779	2.39
1888.....	2,602,552	4,674,140	1.80	1911.....	11,323,388	26,467,646	2.34
1889.....	2,658,303	4,894,287	1.84	1912.....	14,512,829	36,019,044	2.48
1890.....	3,084,682	5,676,247	1.84	1913.....	15,012,178	37,334,940	2.49
1891.....	3,577,749	7,019,425	1.96	1914.....	13,637,529	33,471,801	2.45
1892.....	3,287,745	6,363,757	1.94	1915.....	13,267,023	32,111,182	2.42
1893.....	3,783,499	7,359,080	1.95	1916.....	14,483,395	38,817,481	2.68
1894.....	3,847,070	7,429,468	1.93	1917.....	14,046,759	43,199,831	3.08
1895.....	3,478,344	6,739,153	1.94	1918.....	14,977,926	55,192,896	3.68
1896.....	3,745,716	7,226,462	1.93	1919*.....	13,919,096	55,622,670	3.99
1897.....	3,786,107	7,303,597	1.93	1920*.....	16,946,764	82,496,538	4.86
1898.....	4,173,108	8,224,288	1.97	1921*.....	15,057,493	72,451,656	4.81
1899.....	4,925,051	10,283,497	2.09	1922*.....	15,157,431	65,518,497	4.32
1900.....	5,777,319	13,742,178	2.38	1923*.....	16,990,571	72,058,986	4.24
1901.....	6,486,325	12,699,243	1.96	1924*.....	13,638,197	53,593,988	3.93
1902.....	7,466,681	15,210,877	2.04				
				<b>Total.....</b>	<b>375,186,812</b>	<b>1,056,634,535</b>	<b>2.82</b>

\*The tonnage shown is the total output from all mines. Prior to 1919 the tonnage shown includes only sales, colliery consumption, and coal used by the operators.

**Tonnage Lost.**—Tonnage lost through absenteeism, lack of orders, car shortage, mine disability, and other causes, has been shown in tabular form for all the coal mines of Canada. This table shows the percentage of the possible output produced, by provinces, with analyses of the tonnage lost through each cause.

It will be readily understood that in any statement of tonnage lost by operating mines the method of computing the data must be more or less arbitrary. A plan has been worked out by the Bureau which is now being applied in every coal-producing province, and the following outline of the procedure is given in order that the reader may clearly understand how the data in the "Tonnage Lost" table are obtained.

For each month the actual output and the actual number of days' work done by all employees on the colliery pay-rolls are determined and from these two figures the output per man-day is deduced. The number of individual shifts lost by the men whose names are on the colliery payroll for the month is recorded, and the total number of shifts so lost is multiplied by the actual tonnage produced per man-day during the month. This lost tonnage plus the actual output of the mine during the month is regarded as the possible output and the percentages given in the table showing the proportions produced and lost, are computed from these figures. The tonnage lost is then analysed according to the cause of loss and the percentage figures are included in the table.

Computed on the foregoing basis, the tonnage lost in Canadian coal mines during 1924 amounted to 33 per cent of the total output, while the corresponding figure for 1923 was 26 per cent, lack of orders being the main reason for the large percentage of tonnage lost as compared with the foregoing year.

Table 121.—Tonnage Lost in the Coal Mines of Canada in 1922, 1923 and 1924 Showing by Provinces the Relative Percentages Produced and Lost with an Analysis of the Percentage Lost.

Province		Per cent produced	Per cent lost	Percentage Lost Through				
				Absenteeism	Lack of orders	Car shortage	Mine disability	Other causes
Nova Scotia.....	1922	73	27	5.1	11.9	0.7	0.5	8.8
	1923	72	28	7.8	9.5	0.8	1.0	8.9
	1924	65	35	3.2	21.7	0.6	1.5	8.0
New Brunswick.....	1922	79	21	5.0	13.0	.....	.....	3.0
	1923	89	11	8.1	.....	0.1	1.0	1.8
	1924	83	17	3.9	10.5	0.1	0.2	2.3
Saskatchewan.....	1922	77	23	0.3	19.5	0.4	0.5	2.3
	1923	75	25	0.9	17.8	1.1	1.6	3.6
	1924	65	35	0.3	32.6	0.2	0.0	1.9
Alberta.....	1922	78	22	1.3	13.3	0.9	0.4	6.1
	1923	73	27	1.2	18.4	3.2	0.7	3.5
	1924	66	34	0.6	13.9	0.7	0.5	18.3
British Columbia.....	1922	84	16	3.2	9.0	2.4	.....	1.4
	1923	81	19	1.9	16.1	0.2	0.1	0.7
	1924	80	20	1.9	14.4	0.3	0.1	3.3
Canada.....	1922	77	23	3.1	12.2	1.1	0.4	6.2
	1923	74	26	4.0	14.3	1.7	0.8	5.2
	1924	67	33	2.4	17.9	0.6	0.8	11.3

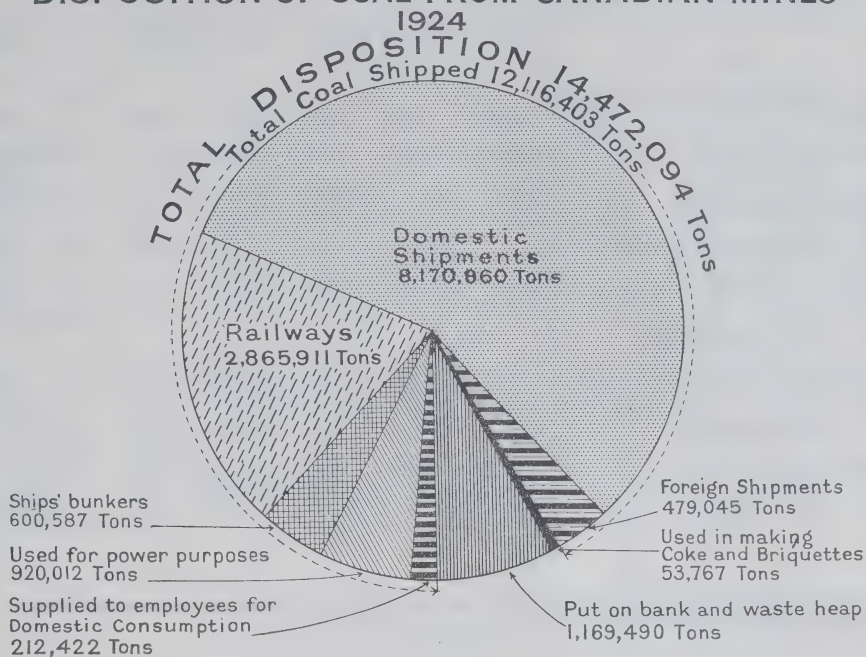
**Disposition.**—Disposition of coal from Canadian mines in 1924 showed decreases in almost every item; the total disposition marked a loss of 3,300,325 tons from the total in 1923. A word of explanation may be given in connection with the item “put on bank” and “lifted from bank”. The data show the quantities put on bank at all mines during the year and the gross amount removed from bank during year. The amount of coal used in making coke in 1924 was approximately half of that consumed in 1923; this reflected the operations in the iron and steel industry in which metallurgical coke is such an important raw material, particularly in the manufacture of pig iron.

Table 122.—Disposition of Coal from Canadian Mines, 1923 and 1924  
(Short tons)

	1923			1923		
	Total coal	Total value	Average value per ton	Total coal	Total value	Average value per ton
		\$	\$		\$	\$
Supplied to employees for domestic consumption.....	249,798	645,302	2.58	212,422	675,935	3.18
Used for power purposes—						
(a) Shops.....	11,440	35,237	3.08	5,590	21,296	3.81
(b) Colliery boilers.....	1,006,880	3,101,062	3.08	845,830	2,676,622	3.16
(c) Companies' railroads.....	87,836	270,526	3.08	67,281	269,177	4.00
(d) Harbour tugs and dredges.....	694	2,140	3.08	1,311	5,770	4.40
Shipped. (See Table 125)—						
(a) Ships' bunkers.....	606,521	3,178,825	5.24	600,587	.....	.....
(b) Railroads.....	4,923,962	23,048,877	4.68	2,865,911	49,685,456	4.10
(c) Other.....	9,700,337	41,318,156	4.26	8,649,905	.....	.....
Used in making coke at the colliery.....	100,537	519,773	5.17	53,767	271,722	5.05
Used in making briquettes.....	37,363	106,587	2.85	.....	.....	.....
Put on bank.....	730,151	2,903,775	3.98	892,278	3,145,490	3.53
Put on waste heap.....	316,900	851	0.00	277,212	6,710	0.02
<b>Total Disposition.....</b>	<b>17,772,419</b>	<b>75,131,201</b>	<b>4.23</b>	<b>14,472,094</b>	<b>56,758,178</b>	<b>3.92</b>
Lifted from bank.....	781,848	3,072,215	3.93	833,897	3,164,190	3.79
<b>Total Output.....</b>	<b>16,990,571</b>	<b>72,058,986</b>	<b>4.24</b>	<b>13,638,197</b>	<b>53,593,988</b>	<b>3.93</b>

## DISPOSITION OF COAL FROM CANADIAN MINES

1924



## CONSUMPTION OF COAL IN CANADA

1924

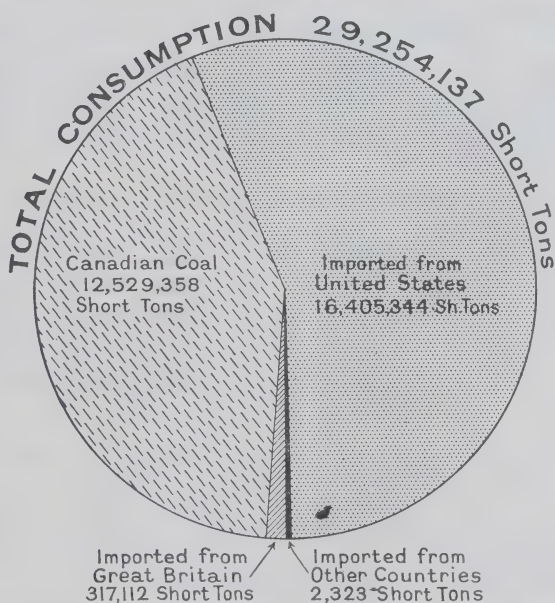
Drawn by N.R.I.S.  
Interior

Table 123.—Disposition of Coal from Canadian Mines, by Provinces, 1923

(Short tons)

	Nova Scotia	New Brunswick	Saskat- chewan	Alberta	British Columbia	Yukon	Canada
Supplied to employees for domestic consumption.....	162,987	3,508	3,998	51,626	27,679	.....	249,798
Coal shipped (See Table 125).....	5,884,084	264,558	407,422	6,447,023	2,227,293	440	15,230,820
Used under colliery boilers.....	490,376	7,963	20,720	268,921	218,880	20	1,006,880
Used by company's railroads.....	59,883	86	2,967	7,605	17,795	.....	87,836
Used for manufacture of coke at colliery.....	.....	.....	.....	.....	100,537	.....	100,537
Used in making briquettes.....	.....	.....	.....	37,363	.....	.....	37,363
Used in shops, etc.....	11,440	.....	.....	.....	.....	.....	11,440
Used by harbour tugs and dredges.....	694	.....	.....	.....	.....	.....	694
Put on bank.....	534,709	34,385	5,163	55,718	100,176	.....	730,151
Put on waste heap.....	14,614	137	2,695	74,818	224,636	.....	316,900
<b>Total Disposition.....</b>	<b>7,158,287</b>	<b>310,637</b>	<b>442,965</b>	<b>6,943,074</b>	<b>2,916,996</b>	<b>460</b>	<b>17,772,419</b>
Lifted from bank.....	560,449	34,020	4,865	88,677	93,690	147	781,848
<b>Total Output.....</b>	<b>6,597,838</b>	<b>276,617</b>	<b>438,100</b>	<b>6,854,397</b>	<b>2,823,306</b>	<b>313</b>	<b>16,990,571</b>

Table 124.—Disposition of Coal from Canadian Mines by Provinces, 1924

(Short tons)

	Nova Scotia	New Brunswick	Saskat- chewan	Alberta	British Columbia	Yukon	Canada
Supplied to employees for domestic consumption.....	124,511	3,010	3,972	54,095	26,834	.....	212,422
Coal shipped (See Table 125).....	4,870,471	211,245	448,769	4,851,273	1,734,144	501	12,116,403
Used under colliery boilers, etc.....	458,172	3,346	20,811	196,548	166,933	20	845,830
Used by company's railroads.....	44,648	.....	3,329	5,299	14,005	.....	67,281
Used for manufacture of coke at colliery.....	.....	.....	.....	.....	53,767	.....	53,767
Used in shops, etc.....	5,590	.....	.....	.....	.....	.....	5,590
Used by harbour tugs and dredges.....	1,311	.....	.....	.....	.....	.....	1,311
Put on bank.....	729,760	11,957	2,414	59,671	88,476	.....	892,278
Put on waste heap.....	6,267	73	2,394	74,245	193,633	600	277,212
<b>Total Disposition.....</b>	<b>6,240,730</b>	<b>229,631</b>	<b>481,689</b>	<b>5,241,131</b>	<b>2,277,792</b>	<b>1,121</b>	<b>14,472,094</b>
Lifted from bank.....	683,289	12,510	2,571	51,402	84,125	.....	833,897
<b>Total Output.....</b>	<b>5,557,441</b>	<b>217,121</b>	<b>479,118</b>	<b>5,189,729</b>	<b>2,193,667</b>	<b>1,121</b>	<b>13,638,197</b>

**Shipments.**—The table on shipments of coal shows both the domestic and foreign destinations of the various kinds sold. Shipments amounted to 12,116,403 tons in 1924 or 20.4 per cent less than in 1923 when 15,230,820 tons were shipped. Domestic shipments amounted to 8,170,860 tons as compared with 8,746,809 tons in the preceding year. Railroads consumed only 2,865,911 tons or 2,000,000 tons less than in the previous year and shipments to foreign markets dropped to about half the amount exported in 1923.

**Table 125.—Shipments of Coal from Canadian Mines by Grades and Destinations, 1923 and 1924**

(Short tons)

Destination	1923				1924			
	Run-of-mine	Screened	Slack	Total	Run-of-mine	Screened	Slack	Total
Prince Edward Island.....	13,990	68,047	380	82,417	7,053	57,780	509	65,342
Nova Scotia.....	574,835	571,775	709,353	1,855,963	290,505	493,627	570,571	1,354,703
New Brunswick.....	462,061	220,573	52,517	735,151	300,948	219,423	88,499	608,870
Quebec.....	1,290,477	28,151	221,656	1,540,284	1,226,932	60,994	367,841	1,655,767
Ontario.....	24,371	45,075	8,320	77,766	2,740	18,326	7,011	28,077
Manitoba.....	176,413	537,433	71,102	784,948	153,880	510,380	73,817	738,077
Saskatchewan.....	234,900	1,078,818	110,598	1,424,316	247,819	1,051,885	120,237	1,419,942
Alberta.....	229,761	807,304	293,881	1,330,946	253,618	854,974	285,256	1,393,848
British Columbia.....	91,750	576,429	246,399	914,578	67,052	595,102	243,579	905,733
Yukon.....		440		440		501		501
<b>Total Domestic Shipments</b>	<b>3,098,558</b>	<b>3,934,045</b>	<b>1,714,206</b>	<b>8,746,809</b>	<b>2,550,547</b>	<b>3,862,993</b>	<b>1,757,320</b>	<b>8,170,860</b>
Railroads.....	4,540,483	238,059	145,420	4,923,962	2,469,159	237,284	159,468	2,865,911
Ships' Bunker.....	260,144	338,072	8,305	606,521	268,468	324,539	7,580	600,587
<b>Total Railroads and Ships' Bunkers</b>	<b>4,800,627</b>	<b>576,131</b>	<b>153,725</b>	<b>5,530,483</b>	<b>2,737,627</b>	<b>561,823</b>	<b>167,048</b>	<b>3,466,498</b>
United States.....	323,965	196,268	63,173	583,406	29,627	156,913	38,481	225,021
Newfoundland.....	107,465	153,444	10,476	271,385	102,619	139,210	12	241,841
West Indies.....		106		106	81			81
Europe.....	86,536	1,120		87,656				
Other Places.....	3,031	7,383	561	10,975	3,601	7,605		11,206
Lost at Sea.....					896			896
<b>Total Foreign Shipments</b>	<b>520,997</b>	<b>358,321</b>	<b>74,210</b>	<b>953,528</b>	<b>136,824</b>	<b>303,728</b>	<b>38,493</b>	<b>479,045</b>
<b>Total</b>	<b>8,420,182</b>	<b>4,868,497</b>	<b>1,942,141</b>	<b>15,230,820</b>	<b>5,424,998</b>	<b>4,728,544</b>	<b>1,962,861</b>	<b>12,116,403</b>

**Imports.**—Data regarding imports of anthracite and bituminous coal into Canada are supplied to the Bureau twice a month by the Department of Customs. The figures show for each custom port of entry the total quantity of each kind of coal imported during the period. These data are not comparable with the imports statistics published in the *Monthly Reports on the Trade of Canada*, which reports show only the quantity of coal actually cleared from customs for consumption in Canada. It often happens that large quantities of bituminous coal are brought into Canada but are not cleared from customs until required for use owing to the fact that there is a duty of 53 cents a ton collected on all bituminous coal, round and run-of-mine, imported.

Since Canada's coal resources lie in the maritime provinces and in the three western provinces, central Canada has so far been largely dependent upon the United States for its supply of fuel. Since 1922, owing to the great strike which tied up United States mines and some of those in Canada in that year, considerable quantities of coal have been imported from Great Britain.

During 1924, importations of anthracite from Great Britain amounted to 275,277 tons as against 261,659 tons in 1923. This increase was no doubt caused through the popular domestic use of high grade Welsh coal. On the other hand the imports of bituminous coal fell away to a very large extent; whereas some 268,000 tons were imported in 1923, only about 42,000 tons came to Canada from Great Britain in 1924. Imports of anthracite coal in egg and nut sizes from the United States in 1924 amounted to 3,681,644 tons as against 4,510,006 tons in 1923. Of this imported coal the greater part came to Ontario and Quebec—the two central provinces of Canada which have to depend to a large extent on imported coal.

Tables 126, 127 and 128 show for anthracite and bituminous coal respectively the importations by provinces and by grades of coal for the past three years. These data have been supplemented in Table 129 by a compilation showing the average importations of anthracite and bituminous coal from all sources by grades and by provinces during the five years 1920-1924. Similar data for the principal fuel-consuming areas in central Canada are shown in Table 130.

Table 126.—Imports of Coal into Canada from Great Britain, by Kinds and Grades and by Provinces, 1923 and 1924  
(Short tons)

Destination	1923				1924			
	Anthracite		Bituminous		Anthracite		Bituminous	
	Egg, nut, etc.	Dust	Round and run-of-mine	Slack	Egg, nut, etc.	Dust	Round and run-of-mine	Slack
Nova Scotia.....	18,570		7,871		12,461		246	
New Brunswick.....	35,787		5,513	17,927	25,579		15	
Quebec.....	183,702	21,356	42,552	194,946	229,142		18,708	21,134
Ontario.....	2,244				6,251	1,844		
British Columbia.....			1				1,793	
Canada.....	240,303	21,356	55,937	212,873	273,433	1,844	20,762	21,134

Table 127.—Imports of Anthracite Coal into Canada from United States by Kinds and Grades and by Provinces, 1922, 1923 and 1924  
(Short tons)

Destination	1922		1923		1924	
	Egg, nut, etc.	Dust	Egg, nut, etc.	Dust	Egg, nut, etc.	Dust
Prince Edward Island.....	4,589		4,303		3,571	
Nova Scotia.....	21,363	56	35,169		37,616	
New Brunswick.....	40,252		54,291	265	58,681	251
Quebec.....	633,237	156,210	1,359,735	251,618	933,390	157,181
Ontario.....	1,573,545	70,016	2,999,919	142,603	2,615,688	65,310
Manitoba.....	10,975	3,740	54,290	1,566	30,324	3,898
Saskatchewan.....	111	120	2,125	166	1,687	33
British Columbia.....	34		174		687	
Canada.....	2,284,106	230,142	4,510,006	396,216	3,681,644	226,673

Table 128.—Imports of Bituminous Coal into Canada from United States by Kinds and Grades and by Provinces, 1922, 1923 and 1924  
(Short tons)

Destination	1922		1923		1924	
	Round and run-of-mine	Slack	Round and run-of-mine	Slack	Round and run-of-mine	Slack
Prince Edward Island.....	619	736	1,263		3,597	
Nova Scotia.....	5,245	988	26,340	18,086	60,209	6,959
New Brunswick.....	23,982	37,240	50,882	27,980	42,657	29,880
Quebec.....	1,052,360	264,309	2,187,343	735,643	993,281	532,235
Ontario.....	7,917,917	1,529,676	11,048,490	3,019,512	8,138,908	2,598,940
Manitoba.....	29,491	45,357	34,328	77,806	43,384	100,225
Saskatchewan.....	385	1,099	421	1,186	(b) 1,028	1,533
Alberta.....	538	609	564	548	(b) 826	383
British Columbia.....	9,664	3,798	(a) 14,075	6,174	(c) 33,714	15,305
Yukon.....	32		5		24	
Canada.....	9,040,233	1,883,812	13,363,716	3,886,913	9,317,628	3,285,460

(a) Includes 2331 tons lignite coal.  
(b) Includes 139 tons lignite coal.  
(c) Includes 25,763 tons lignite coal.

**Table 129.—Average Imports of Coal into Canada by Kinds and Grades and by Provinces for the Five Years 1920-1924**

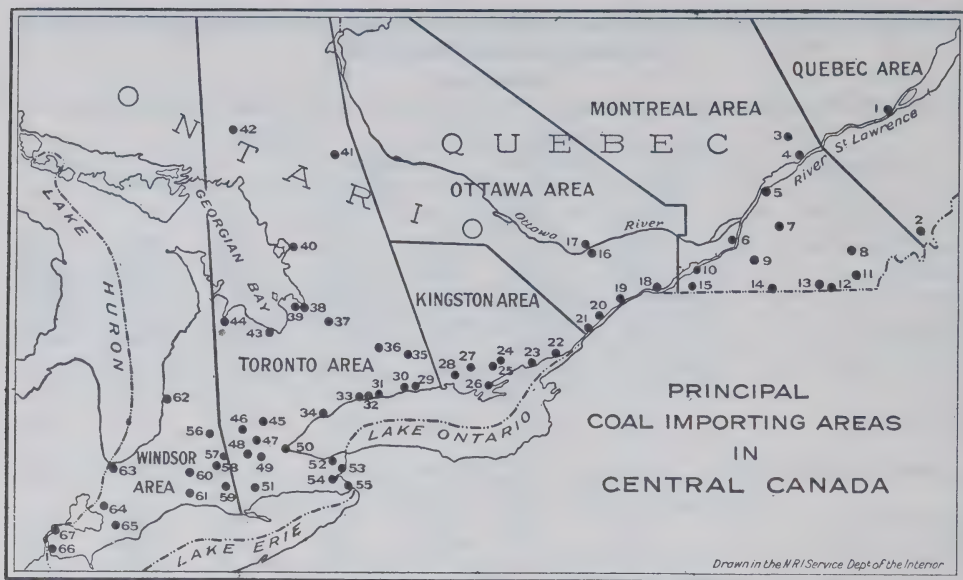
(Short tons)

Destination	Anthracite			Bituminous			Total
	Egg, nut, etc.	Dust	Total	Round and run- of-mine	Slack	Total	
Prince Edward Island.....	4,930		4,930	1,246	147	1,393	6,323
Nova Scotia.....	47,672	20	47,692	21,477	5,349	26,826	74,518
New Brunswick.....	74,876	103	74,979	28,801	30,814	59,615	134,594
Quebec.....	1,169,912	216,939	1,386,851	1,277,222	590,794	2,568,016	3,954,867
Central Ontario.....	2,513,916	86,885	2,600,811	7,453,607	1,976,521	9,430,128	12,030,939
Head of Lakes.....	153,559	1,630	157,189	1,838,707	192,569	2,031,276	2,188,465
Total Ontario.....	2,669,485	88,515	2,758,000	9,292,314	2,169,090	11,461,404	14,219,404
Manitoba.....	27,767	3,388	31,155	31,324	58,870	90,194	121,349
Manitoba and Head of Lakes	183,326	5,018	188,344	1,865,487	247,818	2,113,305	2,301,649
Saskatchewan.....	868	72	940	603	1,060	1,663	2,603
Alberta.....	81	35	116	615	566	1,181	1,297
British Columbia.....	489		489	17,209	5,838	23,047	23,536
Yukon.....				15		15	15
Canada.....	3,996,080	309,072	4,305,152	11,370,826	2,862,528	14,233,354	18,538,506

**Table 130.—Average Imports of Coal into Central Canada by Principal Areas for the Five Years 1920-1924**

(Short tons)

Area	Anthracite			Bituminous			Total
	Egg, nut, etc.	Dust	Total	Round and run- of-mine	Slack	Total	
Quebec.....	97,522	16,633	114,155	149,644	49,027	198,671	312,826
Montreal.....	1,059,715	198,650	1,258,365	1,791,195	514,548	2,305,743	3,564,108
Ottawa.....	285,378	16,418	301,796	533,838	174,259	708,097	1,009,893
Kingston.....	121,043	1,188	122,231	76,163	103,979	180,142	302,373
Toronto.....	1,772,438	61,267	1,836,705	4,016,560	975,754	4,992,314	6,829,019
Windsor.....	328,138	6,449	334,587	2,025,119	505,519	2,530,638	2,865,225
Total.....	3,664,234	303,605	3,967,839	8,592,519	2,323,086	10,915,605	14,883,444



### Key to the Ports of Entry Shown on the Map

<b>QUEBEC AREA—</b>	<b>OTTAWA AREA—</b>	<b>TORONTO AREA—Con.</b>	<b>TORONTO AREA—Con.</b>
Quebec City	16 Ottawa	32 Oshawa	51 Simcoe
Megantic	17 Hull	33 Whitby	52 St. Catharines
	18 Cornwall	34 Toronto	53 Niagara Falls
<b>MONTREAL AREA—</b>	19 Morrisburg	35 Peterboro	54 Welland
Shawinigan Falls	20 Prescott	36 Lindsay	55 Bridgeburg
Three Rivers	21 Brockville	37 Orillia	
Sorel	<b>KINGSTON AREA—</b>	38 Port McNicoll	<b>WINDSOR AREA—</b>
Montreal	22 Gananoque	39 Midland	56 Stratford
St. Hyacinthe	23 Kingston	40 Parry Sound	57 Woodstock
Sherbrooke	24 Napanee	41 North Bay	58 Ingersoll
St. John's	25 Deseronto	42 Sudbury	59 Tillsonburg
Valleyfield	26 Picton	43 Collingwood	60 London
Cootook	27 Belleville	44 Owen Sound	61 St. Thomas
Beebe Junction	28 Trenton	45 Guelph	62 Goderich
Mansonville	<b>TORONTO AREA—</b>	46 Kitchener	63 Sarnia
St. Armand	29 Cobourg	47 Galt	64 Wallaceburg
Athelstan	30 Port Hope	48 Paris	65 Chatham
	31 Bowmanville	49 Brantford	66 Amherstburg
		50 Hamilton	67 Windsor

**Consumption.**—Summary statistics showing the annual consumption of coal in Canada from 1903 to 1924 and the coal made available for consumption in Canada in 1924 are shown in Tables 131 and 132.

Data on output and interprovincial shipments were compiled from the monthly statements sent in by the coal operators. Imports and exports items were compiled from data supplied by the Department of Customs. In Table 131 the Canadian coal is the total of the tonnages of Canadian coal sold and used, less the amount of Canadian coal exported. To this amount is added the "imported coal entered for consumption" and this total shows the amount of coal consumed in Canada during the year.

In Table 132 the quantities of coal imported from Great Britain are shown separately. Figures for the imported coal dumped at Fort William and Port Arthur have been included with the quantities cleared from Customs in the ports of Manitoba since most of the coal unloaded at the Canadian ports at the Head of the Lakes finds its way westward to points in Manitoba. From this table it appears that in 1924 Canada produced 13.64 million tons of coal, exported 0.77 million tons, imported from the United States 16.51 million tons and from Great Britain 0.31 million tons, thus making 29.69 million tons available for consumption while Table 131 shows that the consumption of coal in Canada during the same year amounted to 29.25 million tons.

Table 131.—Annual Consumption of Coal in Canada, 1903-1924

(Short tons)

Calendar year	Canadian †		Imported coal "entered for consumption"						Total	Per capita		
			From U.S.A.		From Great Britain		Total					
	Short tons	%	Short tons	%	Short tons	%	Short tons	%				
1903.....	6,005,735	52.2	Data not separately compiled prior to 1919						5,491,870	47.8	11,497,605	2.005
1904.....	6,697,183	49.2							6,909,651	50.8	13,606,834	2.346
1905.....	7,032,661	48.9							7,343,880	51.1	14,376,541	2.362
1906.....	7,927,560	51.7							7,398,906	48.3	15,326,466	2.425
1907.....	8,617,352	45.0							10,549,503	55.0	19,166,855	2.947
1908.....	9,156,478	47.3							10,195,424	52.7	19,351,902	2.820
1909.....	8,913,376	47.9							9,711,826	52.1	18,625,202	2.682
1910.....	10,532,103	50.2							10,438,123	49.8	20,970,226	2.960
1911.....	9,822,749	40.5							14,424,949	59.5	24,247,698	3.365
1912.....	12,385,696	46.0							14,549,104	54.0	26,934,800	3.657
1913.....	13,450,158	42.6							18,132,387	57.4	31,582,545	4.196
1914.....	12,214,403	45.5							14,637,920	54.5	26,852,323	3.490
1915.....	11,500,480	48.1							12,406,212	51.9	23,906,792	3.041
1916.....	12,348,036	41.3							17,517,820	58.7	29,865,856	3.717
1917.....	12,313,603	37.2							20,810,132	62.8	33,123,735	4.049
1918.....	13,160,731	37.8							21,611,101	62.2	34,771,832	4.175
1919.....	11,611,168	40.2	17,292,913	59.8	344.....	17,293,257	59.8	28,904,425	3.409			
1920.....	14,025,566	42.8	18,752,981	57.2	.....	*18,753,542	57.2	32,779,108	3.797			
1921.....	12,715,734	41.0	18,300,081	59.0	1,591.....	*18,302,062	59.0	31,017,796	3.529			
1922.....	13,044,352	50.0	12,255,555	47.0	765,980	3.0	*13,023,525	50.0	26,067,877	2.915		
1923.....	15,070,962	41.8	20,417,239	56.7	572,570	1.5	*20,989,953	58.2	36,060,915	3.970		
1924.....	12,529,358	42.8	16,405,344	56.1	317,112	1.1	*16,724,779	57.2	29,254,137	3.171		

† The sum of Canadian coal mine sales, colliery consumption, coal supplied to employees and coal used in making coke, etc., less the tonnage of coal exported.

\* Includes small tonnages from all countries other than Great Britain and United States.

**Table 132.—Summary Statistics for 1924—Output, Exports, Interprovincial Shipments, Imports and Coal made Available for Consumption in Canada, by Provinces**  
(Short tons)

Province	Canadian Coal				Imported from U.S.A.	Imported from Great Britain	Coal available for consumption
	Output	Received from other provinces	Shipped to other provinces	Exported			
<b>PRINCE EDWARD ISLAND—</b>							
Anthracite.....					3,571		3,571
Bituminous.....		65,342			3,597		68,939
Total.....		65,342			7,168		72,510
<b>NOVA SCOTIA—</b>							
Anthracite.....					37,616	12,461	50,077
Bituminous.....	5,557,441		2,161,729	341,307	67,168	246	3,121,819
Total.....	5,557,441		2,161,729	341,307	104,784	12,707	3,171,896
<b>NEW BRUNSWICK—</b>							
Anthracite.....					58,932	25,579	84,511
Bituminous.....	217,121	451,652	22,302	31,019	72,537	15	688,004
Total.....	217,121	451,652	22,302	31,019	131,469	25,594	772,515
<b>QUEBEC—</b>							
Anthracite.....					1,090,571	229,142	1,319,713
Bituminous.....		1,655,767		9,005	1,525,516	39,842	3,212,120
Total.....		1,655,767		9,005	2,616,087	268,984	4,531,833
<b>CENTRAL ONTARIO—</b>							
Anthracite.....					2,591,710	8,095	2,599,805
Bituminous.....		11,280			8,833,935		8,845,215
Lignite.....		16,239					16,239
Sub-bituminous.....		558					558
Total.....		28,077			11,425,645	8,095	11,461,817
<b>MANITOBA AND HEAD OF LAKES—</b>							
Anthracite.....					123,510		123,510
Bituminous.....		10,335		3,617	2,047,522		2,054,240
Lignite.....		665,935					665,935
Sub-bituminous.....		61,807					61,807
Total.....		738,077		3,617	2,171,032		2,905,492
<b>SASKATCHEWAN—</b>							
Anthracite.....					1,720		1,720
Bituminous.....		75,153		4,728	2,422		72,847
Lignite.....	479,118	1,084,259	223,737		139		1,339,779
Sub-bituminous.....		54,789					54,789
Total.....	479,118	1,214,201	223,737	4,728	4,281		1,469,135
<b>ALBERTA—</b>							
Anthracite.....							
Bituminous.....	1,514,382	22,375	82,506	435	1,209		1,455,025
Lignite.....	3,085,179	1,110	1,617,614				1,468,675
Sub-bituminous.....	590,168		128,646				461,522
Total.....	5,189,729	23,485	1,828,766	435	1,209		3,385,222
<b>BRITISH COLUMBIA—</b>							
Anthracite.....					687		687
Bituminous.....	2,193,667	25,622	50,989	383,135	23,256 (a)	1,793	1,810,214
Lignite.....		73,808			25,763		99,571
Sub-bituminous.....		11,492					11,492
Total.....	2,193,667	110,922	50,989	383,135	49,706 (a)	1,793	1,921,964
<b>YUKON—</b>							
Anthracite.....							
Bituminous.....	1,121				24		1,145
Total.....	1,121				24		1,145
<b>CANADA—</b>							
Anthracite.....					3,908,317	275,277	4,183,594
Bituminous.....	9,483,732	2,317,526	2,317,526	773,246	12,577,186 (a)	41,896	21,329,568
Lignite.....	3,564,297	1,841,351	1,841,351		25,902		3,590,199
Sub-bituminous.....	590,168	128,646	128,646				590,168
Total.....	13,638,197	4,287,523	4,287,523	773,246	16,511,405 (a)	317,173	29,693,529

\*Includes all coal shipped to any point in Ontario from Western Mines.

(a) Includes 1,793 tons imported from other Countries.

Table 133.—The World's Production of Coal<sup>1</sup>, 1921-1924.

(In metric tons)

Country	1921	1922	1923	1924
<b>North America:</b>				
Canada: Coal.....	10,684,259	10,587,611	12,163,804	9,130,000
Lignite.....	2,975,598	3,162,907	3,249,605	3,218,000
Greenland.....	2,200	2,100	(a)	(a)
Mexico.....	731,022	949,677	1,261,541	(a)
U.S.: Anthracite.....	82,076,000	49,607,344	84,675,282	79,765,491
Bituminous.....	377,316,000	383,073,174	511,791,872	438,420,000
Lignite.....				
<b>South America—</b>				
Argentina.....	(a)	(a)	(a)	(a)
Brazil.....	400,000	400,000	324,154	268,177
Chile.....	1,275,117	1,053,001	1,164,028	(a)
Colombia.....	(a)	(a)	(a)	(a)
Peru.....	345,481	249,492	298,000	(a)
Venezuela.....	22,094	20,782	(a)	(a)
<b>Europe—</b>				
Austria: Coal.....	137,363	165,727	158,183	172,000
Lignite.....	2,478,862	3,135,902	2,658,907	2,800,000
Belgium.....	21,750,410	21,208,500	22,622,340	23,359,790
Bulgaria.....	911,664	1,021,327	1,063,662	(a)
Czecho-Slovakia: Coal.....	11,648,399	10,464,990	12,347,251	14,359,400
Lignite.....	21,050,712	19,174,296	16,265,530	20,507,178
France: Coal.....	28,211,339	31,163,032	37,682,235	44,954,749
Lignite.....	748,634	777,813	861,435	(a)
Germany: Coal (b).....	145,801,715	141,204,597	71,345,820	118,829,000
Lignite.....	123,011,000	137,207,125	118,248,235	124,360,000
Greece.....	168,576	131,515	(a)	(a)
Hungary.....	6,418,560	7,117,610	7,709,775	7,200,000
Iceland.....	(a)	(a)	(a)	(a)
Italy: Coal (c).....	114,236	195,352	168,922	22,100
Lignite.....	1,026,035	745,402	938,229	1,045,600
Jugo-Slavia.....	3,063,198	3,726,568	3,532,400	4,183,600
Netherlands: Coal (d).....	4,167,960	4,866,371	5,595,478	6,160,615
Lignite.....	121,715	28,919	54,185	(a)
Norway.....	(a)	(a)	(a)	(a)
Poland.....	7,842,553	24,194,797	36,296,032	32,224,680
Portugal.....	135,732	158,500	(a)	(a)
Roumania.....	1,801,687	2,116,221	2,366,068	(a)
Russia.....	7,550,800	8,914,600	(h) 14,504,300	14,000,000
Spain: Coal.....	5,011,429	4,435,843	5,971,446	6,102,391
Lignite.....	408,684	329,680	394,368	371,488
Spitzbergen (e).....	210,000	316,000	340,942	(a)
Sweden.....	376,692	378,861	419,569	(a)
Switzerland.....	10,714	3,380	(a)	(a)
United Kingdom.....	165,871,362	253,613,054	280,430,369	271,418,769
<b>Asia—</b>				
British India.....	19,511,154	19,316,112	19,973,285	20,582,156
China.....	19,876,375	22,681,000	18,595,000	20,524,000
Chosen.....	310,560	317,330	(a)	(a)
Federated Malay States.....	304,156	286,351	323,100	(a)
Indo-China.....	920,900	988,991	105,670	(a)
Japan (g).....	26,000,000	29,150,000	30,751,462	30,000,000
Russia.....	2,384,000	1,276,900	(h)	(h)
Turkey.....	(a)	680,000	(a)	(a)
<b>Africa—</b>				
Algeria.....	9,541	8,855	(a)	(a)
Nigeria.....	216,262	123,027	173,422	(a)
Rhodesia.....	521,404	467,787	559,999	591,526
Tunis.....	22,207	343	620	(a)
Union of South Africa.....	10,339,044	8,830,774	10,810,897	11,332,406
<b>Oceania—</b>				
Australia.....	13,084,210	12,496,317	12,914,492	14,200,000
British Borneo.....	27,000	88,948	(a)	(a)
Dutch East Indies.....	1,212,665	1,032,310	1,000,000	(a)
New Zealand.....	1,838,131	1,887,637	2,001,548	(a)
Philippine Islands.....	40,000	(a)	(a)	(a)
<b>Total.....</b>	<b>1,134,000,000</b>	<b>1,226,000,000</b>	<b>1,359,000,000</b>	<b>1,350,000,000</b>

<sup>1</sup> Source—"Mineral Industry, 1924."

(a) Estimate included in total. (b) Includes Saar Basin. (c) Includes new provinces. (d) Includes slack. (e) Shipments to Norway and Sweden. (f) Estimate based on incomplete data. (g) Including Taiwan and Karafuto (h) Russia in Asia included with Russia in Europe.

## COKE

Summary statistics relating to the production of coke and its by-products have been included in this report as a matter of interest.

**Table 134.—Production<sup>1</sup> Exports, and Imports of Coke and its By-Products in Canada, 1922, 1923 and 1924.**

	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Coke—</b>		\$		\$		\$
<i>Coal charged to ovens—</i>						
(a) In coke plants :						
Domestic..... Tons	487,907	1,657,835	736,818	3,120,403	584,304	2,110,064
Foreign..... "	565,496	3,447,928	970,206	6,071,461	826,613	4,415,142
(b) In gas plants :						
Bituminous..... "	641,875	5,459,269	728,011	5,660,184	681,480	4,723,734
Anthracite..... "	21,957	289,483	22,760	284,988	20,064	251,899
<b>Total.....</b> "	<b>1,717,235</b>	<b>10,854,515</b>	<b>2,457,795</b>	<b>15,137,036</b>	<b>2,112,461</b>	<b>11,500,839</b>
<i>Output of coke, by provinces—</i>						
Nova Scotia and New Brunswick . "	191,556	970,535	392,041	3,446,732	259,376	1,621,123
Quebec..... "	262,545	1,466,422	206,962	1,456,135	139,435	1,110,537
Ontario..... "	570,920	4,822,536	856,541	7,095,792	812,939	6,038,724
Manitoba..... "	28,496	338,752	28,278	357,189	28,450	336,762
British Columbia..... "	141,780	1,359,229	153,313	1,456,701	130,399	1,181,657
<b>Total.....</b> "	<b>1,195,297</b>	<b>8,957,474</b>	<b>1,637,135</b>	<b>13,812,549</b>	<b>1,370,599</b>	<b>10,288,803</b>
Recovery of coke in per cent of coal treated..... %	69.6		66.6		64.9	
Imports of coke..... Tons	336,270	3,094,042	733,604	5,790,771	521,725	3,131,485
Exports of coke..... "	19,831	205,627	34,407	433,497	23,144	393,979
Apparent consumption of coke <sup>2</sup> ..... "	1,511,736	11,845,889	2,336,332	19,169,823	1,869,180	13,026,309
<b>OTHER PRODUCTS—</b>						
<i>Production in Canada—</i>						
Ammonium sulphate..... Tons	13,601	667,934	21,518	1,268,146	17,343	865,530
Gas (a) From coke plants..... M. cu. ft.	6,073,763	725,398	14,798,857	1,842,006	6,380,983	1,879,296
(b) From gas plants..... "	12,613,569		13,595,429		13,227,402	
Light oils..... Imp. gal.		181,776		130,662	1,810,301	216,805
Tar and tar products..... "	14,904,076	579,706	17,739,609	611,674	19,007,522	736,034
All other products <sup>3</sup> ..... "		271,645		581,065		346,762
<b>Total.....</b>		<b>2,426,459</b>		<b>4,433,553</b>		<b>4,044,435</b>
<i>Imports—</i>						
Ammonium sulphate..... Tons	413	24,659	259	18,577	388	27,111
Coal tar and pitch..... Gals.	4,302,233	250,316	5,774,256	324,732	2,880,499	186,178
Coal tar base or salt..... Tons	141	53,917	45	27,810	81	33,397
<i>Exports—</i>						
Ammonium sulphate..... Tons	10,285	532,983	17,320	1,044,681	13,357	681,709
Tar and pitch..... Gals	2,016,594	223,622	4,586,753	582,013	2,339,041	273,900

<sup>1</sup> Production data includes the outputs of the "Coke and its By-products Industry" and of the "Illuminating and Fuel Gas Industry."

<sup>2</sup> Includes the consumption in companies' own Coke Plants and in Associated Metallurgical Works.

<sup>3</sup> Includes coke breeze, ammonia liquor and other products.

## FELDSPAR

Canadian feldspar production in 1924 advanced to a new high level of 44,804 tons valued at \$358,540, as compared with 29,225 tons produced in 1923, valued at \$237,601. Of the total 1924 production, Quebec contributed 16,147 tons and Ontario, 28,657 tons.

Exports advanced 11,000 tons to a total of 37,869 tons, and the imports showed an increase of 200 tons to a total of 1,921 tons. Feldspar, finely-ground, is used in the manufacture of enamelware, pottery and porcelain, washing compounds, abrasives, glass, roofing and paint and, in a coarser form, as a constituent of artificial walls and floors. Most of the Canadian production is exported in the crude form to the United States for grinding.

Since the consumption of spar in Canada in the finely-ground condition is not over 3,000 tons per annum, no difficulty is experienced in securing raw material of a quality suitable for any section of the industry. The bulk of the domestic demand is now supplied by Canadian mills. The average price received for crude spar in 1924 was about \$8 per ton, while the ground material brought about \$16.80 per ton.

Grinding plants situated at Toronto and Kingston, Ontario, produced 2,174 tons of ground material during the year. The total capacity of these two plants is approximately 7,500 tons per annum.

**Table 135.—Production in Canada, Imports and Exports of Feldspar, 1922, 1923 and 1924**

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION (shipments)—						
Quebec.....	12,472	127,826	12,026	102,779	16,147	142,118
Ontario.....	15,255	120,576	17,199	134,822	28,657	216,422
<b>Total.....</b>	<b>27,727</b>	<b>248,402</b>	<b>29,225</b>	<b>237,601</b>	<b>44,804</b>	<b>358,540</b>
IMPORTS.....	1,454	31,408	1,701	36,622	1,921	37,845
EXPORTS.....	24,995	170,954	26,476	177,569	37,869	274,681

**Table 136.—Production of Feldspar in Canada, 1890-1924**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	700	3,500	1902.....	7,576	15,152	1914.....	18,060	70,824
1891.....	685	3,425	1903.....	13,928	18,966	1915.....	14,559	57,801
1892.....	175	525	1904.....	11,083	22,166	1916.....	19,488	71,407
1893.....	575	4,525	1905.....	11,700	23,400	1917.....	19,462	89,826
1894.....			1906.....	16,948	40,890	1918.....	18,782	112,728
1895*.....		2,545	1907.....	12,584	29,819	1919.....	14,679	86,231
1896*.....	972	2,583	1908.....	7,877	21,099	1920.....	37,873	280,895
1897.....	1,400	3,290	1909.....	12,783	40,383	1921.....	29,868	230,754
1898.....	2,500	6,250	1910.....	15,809	47,667	1922.....	27,727	248,402
1899.....	3,000	6,000	1911.....	17,723	51,939	1923.....	29,225	237,601
1900.....	318	1,112	1912.....	13,733	30,916	1924.....	44,804	358,540
1901.....	5,350	10,700	1913.....	16,790	60,795	<b>Total.....</b>	<b>448,736</b>	<b>2,292,656</b>

\* Exports

**Table 137.—World's Production of Feldspar 1913, 1920-1924**

(Long tons)

Country	1913	1920	1921	1922	1923	1924
United Kingdom†.....	66,626	76,467	35,976	39,751	54,589	*
Canada <sup>1</sup> .....	14,991	32,907	26,668	24,756	26,094	40,003
Australia.....		4	26	85	33	*
Finland.....		(a) 7	942	1,301	*	*
Germany (Bavaria) <sup>2</sup> .....	*	5,756	7,132	5,982	8,851	*
Italy <sup>2</sup> .....		2,560	2,360	2,745	4,989	*
Japan <sup>2</sup> .....	*	*	*	15,802	*	*
Norway (exports) <sup>4</sup> .....	40,186	6,296	9,200	11,643	12,863	*
Russia <sup>1</sup> .....	*	419	662	*	*	*
Sweden <sup>4</sup> .....	37,269	11,858	19,661	22,010	*	*
United States <sup>3</sup> .....	107,996	135,551	91,865	117,127	145,004	203,400
<b>Total.....</b>	<b>267,068</b>	<b>271,825</b>	<b>194,492</b>	<b>241,202</b>	<b>252,423</b>	<b>243,403</b>

\*Data not available.

†Including China Stone.

Source—

<sup>1</sup>Dominion Bureau of Statistics, Canada.

<sup>2</sup>Imperial Mineral Resources Bureau.

<sup>3</sup>Mineral Resources of United States in 1923. The Mineral Industry in 1924.

<sup>4</sup>Mineral Industry, 1923.

(a) Exports less Imports.

FLUORSPAR

Fluorspar production in Canada in 1924 amounted to only 76 tons valued at \$1,343, this amount being much less than in 1923 when 139 tons were produced with a value of \$1,732.

These shipments were all made from the vicinity of Madoc in Hastings County, Ontario. The Consolidated Mining and Smelting Company of Trail, British Columbia, owners of the Rock Candy mine did not produce any fluorspar in 1924.

The United States tariff of \$5.40 per ton, which was put into effect in September, 1922, practically prohibits the shipment of fluorspar from Canadian deposits to that country.

Imports of fluorspar into Canada during 1924 totalled 4,355 tons, a decrease of 12,880 tons from the total for the preceding year.

Table 138.—Production in Canada, Imports and Exports of Fluorspar, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Ontario.....	284	3,905	64	597	76	1,343
British Columbia.....	4,219	98,233	75	1,135		
<b>Total.....</b>	<b>4,503</b>	<b>102,138</b>	<b>139</b>	<b>1,732</b>	<b>76</b>	<b>1,343</b>
IMPORTS—						
Hydro-fluo-silicic acid.....	.06	15	3.8	662	.01	40
Fluorspar.....	4,980	73,343	17,235	199,595	4,355	50,158
EXPORTS.....	2,944	32,914				

GRAPHITE

Shipments of graphite from Canadian mines in 1924 amounted to 1,334 tons valued at \$76,117 as against 1,113 tons valued at \$67,873 shipped in 1923.

The Black Donald Graphite Company, Limited, at Calabogie, Ontario, operating the mine at White Fish Lake, mined 3,290 tons of ore and milled 2,790 tons. Shipments of graphite from this property totalled 1,288 tons. The remaining 46 tons included in the Canada total were from the province of Quebec.

Table 139.—Production of Graphite in Canada, 1886-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	500	4,000	1899.....	1,130	24,179	1913.....	2,162	90,282
1887.....	300	2,400	1900.....	1,922	31,040	1914.....	1,647	107,203
1888.....	150	1,200	1901.....	2,210	38,780	1915.....	2,635	124,223
1889.....	242	3,160	1902.....	1,095	28,300	1916.....	3,955	325,362
1890.....	175	5,200	1903.....	728	23,745	1917.....	3,714	402,892
1891.....	260	1,560	1904.....	452	11,760	1918.....	3,114	248,870
1892.....	167	3,763	1905.....	541	16,735	1919.....	1,360	100,221
1893.....			1906.....	387	18,300	1920.....	2,190	165,617
1894*.....	3	223	1907.....	579	16,000	1921.....	937	65,862
1895.....	220	6,150	1908.....	251	5,565	1922.....	597	31,353
1896.....	139	9,455	1909.....	864	47,800	1923.....	1,113	67,873
1897.....	436	16,240	1910.....	1,392	74,087	1924.....	1,334	76,117
1898.....		13,698	1911.....	1,269	69,576			
			1912.....	2,060	117,122	<b>Total.....</b>	<b>42,230</b>	<b>2,395,913</b>

\*Exports.

**Table 140.—Production in Canada, Imports and Exports of Graphite, 1922, 1923 and 1924**

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Ore milled.....	1,800		1,400		3,590	
PRODUCTION (shipments)—						
No. 1 Flake.....	597	31,353	1,113	67,873	1,334	76,117
No. 2 Flake.....						
No. 3 Flake and Dust.....						
<b>Total.....</b>	<b>597</b>	<b>31,353</b>	<b>1,113</b>	<b>67,873</b>	<b>1,334</b>	<b>76,117</b>
IMPORTS—						
Crucibles, plumbago.....		39,061		57,322		42,740
Plumbago, not ground or otherwise manufactured.....		1,007		1,661		2,651
Plumbago, ground and manufactures of, n.o.p.....		47,095		70,704		50,924
EXPORTS—						
Graphite or plumbago, crude or refined....	452	16,619	799	36,980	1,148	59,992

**Artificial Graphite.**—Artificial graphite is manufactured in electric furnaces at Niagara Falls, Ontario, by the Acheson Graphite Company. The annual production over a period of sixteen years is shown in the following table:

**Table 141.—Artificial Graphite made in Canada, 1909-1924**

Year	Pounds	Year	Pounds	Year	Pounds
1909.....	513,436	1914.....	1,234,239	1919.....	358,524
1910.....	2,442,166	1915.....	497,271	1920.....	207,180
1911.....	2,172,098	1916.....	525,048	1921.....	376,508
1912.....	2,302,625	1917.....	1,096,172	1922.....	724,524
1913.....	2,184,472	1918.....	1,808,698	1923.....	1,554,376
				1924.....	816,455

## GYPSUM

Increased production of gypsum raised the total for the year 1924 to 646,016 tons with a valuation of \$2,208,108 as compared with 578,301 tons at \$2,243,100 in 1923. Production included lump, crushed, fine ground and calcined gypsum, the last named item comprising sales and also the calcined gypsum used in the calcining plants for the production of wall plaster, wall board, alabastine and other gypsum products. The average values received by the operators were as follows: lump, \$1.81; crushed, \$1.82; fine ground, \$5.82; and calcined, \$10.27 per ton. Compared with 1923, the imports remained constant, while the exports, principally crude gypsum, increased approximately 75,000 tons to a total of 477,462 tons. The total gypsum mined during 1924 was 703,733 tons and the crude gypsum calcined in Canada amounted to 144,744 tons.

Provincial quarry outputs were as follows: Nova Scotia, 478,184 tons; New Brunswick, 95,641 tons; Ontario, 98,324 tons; Manitoba, 31,554 tons and British Columbia, 30 tons.

For statistical purposes, as noted above, the production of gypsum is considered to be the sum of the quantities disposed of in the different marketable forms, care being taken to avoid duplication; the values used are those at point of shipment.

Exports of Canadian crude gypsum principally to the United States totalled 472,236 tons. Ground gypsum and prepared wall plaster exported during the year amounted to 5,226 tons; United States, Newfoundland, Australia and New Zealand were the principal importers of these materials.

Table 142.—Production of Gypsum in Canada, 1886-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	162,000	178,742	1899.....	244,566	257,329	1912.....	578,458	1,324,620
1887.....	154,008	157,277	1900.....	252,101	259,009	1913.....	636,370	1,447,739
1888.....	175,887	179,393	1901.....	293,799	340,148	1914.....	516,880	1,156,207
1889.....	213,273	205,108	1902.....	333,599	379,479	1915.....	474,815	854,929
1890.....	226,509	194,033	1903.....	314,489	388,459	1916.....	342,915	738,593
1891.....	203,605	206,251	1904.....	345,961	373,474	1917.....	336,332	881,984
1892.....	241,048	241,127	1905.....	442,158	586,168	1918.....	152,287	823,006
1893.....	192,568	196,150	1906.....	469,022	643,294	1919.....	299,063	1,215,287
1894.....	223,631	202,031	1907.....	485,921	646,914	1920.....	429,144	1,893,991
1895.....	226,178	202,608	1908.....	340,964	575,701	1921.....	386,550	1,785,538
1896.....	207,032	178,061	1909.....	473,129	809,632	1922.....	559,265	2,160,898
1897.....	239,691	244,531	1910.....	525,246	934,446	1923.....	578,301	2,243,100
1898.....	219,256	232,515	1911.....	518,383	993,394	1924.....	646,016	2,208,108
<b>Total.....</b>							<b>13,660,420</b>	<b>28,539,274</b>

Table 143.—Summary of Statistics on Gypsum in Canada, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude gypsum mined.....	484,629		558,853		703,733	
Crude gypsum calcined.....	145,954		152,036		144,744	
<b>PRODUCTION BY GRADES—</b>						
Lump.....	350,650	534,160	217,414	394,217	139,618	253,191
Crushed.....	68,181	154,197	232,899	443,431	381,262	693,785
Fine ground.....	5,769	35,880	7,452	45,719	5,478	31,882
Calcined.....	134,665	1,436,661	120,536	1,359,733	119,658	1,229,250
<b>Total.....</b>	<b>559,265</b>	<b>2,160,898</b>	<b>578,301</b>	<b>2,243,100</b>	<b>646,016</b>	<b>2,208,108</b>
<b>PRODUCTION BY PROVINCES—</b>						
Nova Scotia.....	332,404	580,148	341,705	747,934	441,752	915,845
New Brunswick.....	82,462	517,668	104,740	564,680	86,738	476,804
Ontario.....	110,227	621,668	99,958	542,317	88,121	467,097
Manitoba.....	34,072	440,914	31,575	386,554	29,375	348,212
British Columbia.....	100	500	323	1,615	30	150
<b>Total.....</b>	<b>559,265</b>	<b>2,160,898</b>	<b>578,301</b>	<b>2,243,100</b>	<b>646,016</b>	<b>2,208,108</b>
<b>IMPORTS—</b>						
Crude.....	2,872	21,040	3,654	39,336	3,252	63,156
Ground.....	148	5,592	78	3,253	102	2,174
Plaster of Paris.....	3,657	49,015	3,617	54,591	3,969	62,770
<b>Total.....</b>	<b>6,677</b>	<b>75,647</b>	<b>7,349</b>	<b>97,180</b>	<b>7,323</b>	<b>128,100</b>
<b>EXPORTS—</b>						
Crude.....	325,354	505,464	307,329	578,859	472,236	747,829
Ground.....	3,186	59,534	4,654	92,478	5,226	83,927
<b>Total.....</b>	<b>328,540</b>	<b>564,998</b>	<b>401,983</b>	<b>671,337</b>	<b>477,462</b>	<b>831,756</b>

## IRON OXIDES

Iron oxides produced in Canada have two main uses: (a) for the purification of illuminating gas and (b) as a raw material in the paint industry. That which is sold to the different Canadian cities for use in the gas works is shipped as mined but that which goes to the paint industry has to be de-hydrated, calcined and ground.

Shipments of iron oxides in 1924 amounted to 7,266 tons valued at \$91,160, as compared with 10,424 tons valued at \$129,636 in 1923.

Although the province of Quebec claimed the greater part of this production, small shipments were also made from the province of British Columbia.

Table 144.—Production of Iron Oxides in Canada, 1886-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	350	2,350	1899.....	3,919	20,000	1912.....	7,654	32,410
1887.....	485	3,733	1900.....	1,966	15,398	1913.....	5,987	41,774
1888.....	397	7,900	1901.....	2,233	16,735	1914.....	5,890	51,725
1889.....	794	15,280	1902.....	4,955	30,495	1915.....	6,248	48,353
1890.....	275	5,125	1903.....	6,266	32,760	1916.....	8,311	58,711
1891.....	900	17,750	1904.....	3,925	24,995	1917.....	9,409	87,605
1892.....	390	5,800	1905.....	5,105	34,675	1918.....	17,317	112,440
1893.....	1,070	17,700	1906.....	6,758	36,125	1919.....	11,862	113,427
1894.....	611	8,690	1907.....	5,528	35,570	1920.....	19,128	157,909
1895.....	1,339	14,600	1908.....	4,746	30,440	1921.....	9,048	93,610
1896.....	2,362	16,045	1909.....	3,940	28,093	1922.....	7,285	110,608
1897.....	3,905	23,560	1910.....	4,813	35,185	1923.....	10,424	129,636
1898.....	2,226	17,450	1911.....	3,622	28,333	1924.....	7,266	91,160
Total.....							199,509	1,654,155

Table 145.—Production in Canada, Imports and Exports of Iron Oxides, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	7,285	110,608	10,424	129,636	7,266	91,160
IMPORTS—						
Ochrey earths.....	1,766	73,115	2,251	79,203	2,103	72,414
Oxides.....	3,671	443,869	3,530	476,382	2,435	387,544
EXPORTS (Mineral pigments, iron oxides and ochres).....	1,259	60,104	1,041	51,617	882	44,681

## MAGNESITE

The total production of magnesite in Canada for 1924 amounted to 3,873 tons valued at \$101,356 as against 4,801 tons valued at \$134,382 in 1923.

All the magnesite mined during 1924 was produced in the province of Quebec and was sold in two forms, namely, dead-burned magnesite and calcined magnesite. Dead-burned magnesite is used entirely in the metallurgical industry as a refractory lining for furnaces. Calcined magnesite is used as a plastic material for floors and walls in buildings and also in the manufacture of pipe and furnace coverings, as it has strong insulating properties.

The "New Tariff Act of 1922 on Imports into United States," which came into effect in September, 1922, provided the following duties on the various forms of magnesite; Crude magnesite,  $\frac{5}{16}$  of 1 cent per pound; caustic calcined magnesite,  $\frac{5}{8}$  of 1 cent per pound; dead-burned and grain magnesite, not suitable for manufacture into oxychloride cements,  $\frac{2}{40}$  of 1 cent per pound.

Exports of calcined magnesite from Canada amounted to 293 tons in 1924; in the preceding year exports totalled 563 tons.

Table 146.—Production of Magnesite in Canada, 1908-1924

Year	Tons	Value	Year	Tons	Value
		\$			\$
1908.....	120	840	1917.....	58,090	728,275
1909.....	330	2,508	1918.....	39,365	1,016,765
1910.....	323	2,160	1919.....	11,273	328,465
1911.....	991	5,531	1920.....	18,378	512,756
1912.....	1,714	9,645	1921.....	3,730	81,320
1913.....	515	3,335	1922.....	2,849	76,294
1914.....	358	2,240	1923.....	4,801	134,382
1915.....	14,779	126,584	1924.....	3,873	101,356
1916.....	55,413	563,829	Total.....	216,902	3,696,285

Table 147.—Production in Canada, Imports and Exports of Magnesite, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude, mined.....	8,678	.....	13,315	.....	10,485	.....
Crude, calcined.....	8,292	.....	12,125	.....	5,162	.....
<b>PRODUCTION—</b>						
Calcined.....	1,026	23,430	120	3,705	1,535	30,216
Dead-burned.....	1,823	52,864	4,681	130,677	2,338	71,140
<b>Total.....</b>	<b>2,849</b>	<b>76,294</b>	<b>4,801</b>	<b>134,382</b>	<b>3,873</b>	<b>101,356</b>
<b>IMPORTS—</b>						
Magnesia pipe covering.....	.....	86,938	.....	141,026	.....	121,046
Magnesite.....	79	2,198	244	9,223	280	8,980
Magnesite firebrick.....	.....	56,561	.....	120,453	.....	91,553
<b>EXPORTS—</b>						
Crude.....	800	1,800	.....	.....	.....	.....
Calcined.....	940	21,317	563	14,056	293	8,520

Table 148. \*World's Production of Magnesite, 1913, 1920-1924.

(Unless otherwise stated the quantities in the table represent crude magnesite mined.)

(Metric tons)

Country.	1913	1920	1921	1922	1923	1924
Australia—						
New South Wales.....	7,112	6,578	12,465	3,424	6,228	—
South Australia.....	—	188	175	585	168	—
Victoria.....	106	153	130	99	76	—
Western Australia.....	—	—	—	—	2	—
Austria-Hungary.....	(a) 422,439	(c) 120,347	(c) 160,823	(c) 281,247	(c) 180,292	—
Canada.....	—	28,159	8,447	7,873	12,079	(f) 3,515
Cyprus.....	—	No data available	—	895	284	—
Greece.....	98,517	71,870	60,132	55,471	57,783	—
India British.....	16,458	14,577	20,338	19,582	19,748	—
Italy.....	600	33,850	9,410	8,700	12,474	—
Norway.....	(b) 656	(b) 2,041	(b) 210	738	2,359	—
Russia.....	—	17,984	(d) 8,340	10,567	(e) 15,429	—
Spain.....	958	1,214	—	303	—	—
Union of South Africa.....	403	1,287	1,317	962	1,240	—
United States (sold or treated).....	8,738	275,571	43,458	50,612	133,582	108,983
Venezuela (exports).....	No data available	2,000	2,450	No data available	—	—
<b>Total.....</b>	<b>555,987</b>	<b>575,819</b>	<b>327,695</b>	<b>441,058</b>	<b>441,744</b>	<b>112,498</b>

\*From Mineral Resources of the United States, 1922 and 1924.

(a) Exports, and computed on a basis of 2·1 tons crude to 1 ton sintered.

(b) Exports. Computed on the basis of 2·1 tons crude to 1 ton sintered. In addition in 1913 there were 626 tons of magnesite brick exported; in 1920 there were 710 tons exported, and in 1921 there were 337 tons exported.

(c) Exports from the Republic of Austria, computed on the basis of 2·1 tons crude to 1 ton sintered. In addition 7,026 tons of caustic magnesia were exported in 1920, and 8,252 tons in 1921. In 1922 the companies operating, reported 427,556 tons raw magnesite produced.

(d) Computed on the basis of 2·1 tons crude to 1 ton sintered.

(e) Operation year Oct. 1, 1922 to Sept. 30, 1923.

(f) From Table 146 of this report.

## MAGNESIUM SULPHATE

No production of magnesium sulphate was reported in Canada during 1924. The 1923 production amounted to 121 tons valued at \$6,580.

Importations during the year of magnesium sulphate or epsom salts amounted to 2,238 tons valued at \$54,139; no exports were recorded.

Natural magnesium sulphate occurs in a deposit near Ashcroft, B.C., owned by the Basque Chemical Company. During 1923 shipments were made as far east in Canada, as Toronto, Ontario.

**Table 149.—Production in Canada, Imports and Exports of Magnesium Sulphate, 1922, 1923 and 1924**

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Crude.....	443	4,183				
Refined.....	578	19,834	121	6,580		
IMPORTS.....	1,398	44,499	1,867	47,155	2,238	54,139
EXPORTS.....	142	4,838	20	830		

**MICA**

The total production of mica in 1924 amounted to 8,182,374 pounds valued at \$357,272 or an average price of 0.04 cents per pound as against 7,049,029 pounds valued at \$326,974 in 1923.

Shipments of rough-cobbed grades were nearly 100 per cent higher in 1924 than in the previous year. Thumb-trimmed production was also greater by approximately 240,000 pounds, while splittings were less by about 46,000 pounds. Scrap material, which includes mica that is too small and irregular for splitting, and the refuse from the trimming shops, is ground and bolted into various sizes, grading from 20-mesh to 200-mesh. Grades ranging from 20 to 80-mesh are used in the manufacture of prepared roofings, the 40-mesh grade, if free from grit, is used as a lubricant in some axle greases, and the 200-mesh grade is used as a filler in rubber manufacture.

The deposits of phlogopite mica in the Lievre-Gatineau district, Quebec, and in Frontenac County, Ontario, continued to be the source of practically the entire Canadian production. It will be noted that the stated value of the exports of Canadian mica exceeded by a considerable amount the value placed on shipments reported by operators. An explanation of this, lies in the fact, that the exportation consisted principally of mica splittings shipped from large trimming shops situated in Ontario and Quebec.

Under the United States "*New Tariff Act*" the duties on the different grades of mica are as follows: Mica, unmanufactured, valued at not above 15 cents per pound—4 cents per pound; Mica unmanufactured valued at above 15 cents per pound—25 per centum ad valorem; mica, cut or trimmed and mica splittings—30 per centum ad valorem; mica plates, and built-up mica, and all manufactures of mica, of which mica is the component material of chief value—40 per centum ad valorem; ground mica—20 per centum ad valorem.

**Table 150.—Production of Mica in Canada, 1886-1924**

Year	Value	Year	Tons	Value	Year	Tons	Value
	\$			\$			\$
1886.....	29,008	1899.....		163,000	1912.....	580	143,976
1887.....	29,816	1900.....		166,000	1913.....	1,104	194,304
1888.....	30,207	1901.....		160,000	1914.....	595	109,061
1889.....	28,718	1902.....		135,904	1915.....	417	91,905
1890.....	68,074	1903.....		177,857	1916.....	1,208	255,239
1891.....	71,510	1904.....		160,777	1917.....	1,166	358,851
1892.....	104,745	1905.....		178,235	1918.....	747	271,550
1893.....	75,719	1906.....		303,913	1919.....	2,754	273,788
1894.....	45,581	1907.....		312,599	1920.....	2,203	376,022
1895.....	65,000	1908.....		139,871	1921.....	702	70,063
1896.....	60,000	1909.....	369	147,782	1922.....	3,349	152,263
1897.....	76,000	1910.....	758	190,385	1923.....	3,525	326,974
1898.....	118,375	1911.....	590	128,677	1924.....	4,091	357,272
				<b>Total.....</b>			<b>6,149,021</b>

Table 151.—Production of Mica in Canada by Grades, 1923 and 1924

	1923			1924		
	Pounds	Value f. o. b. shipping point	Price per pound	Pounds	Value f. o. b. shipping point	Price per pound
		\$	\$		\$	\$
Rough cobbled.....	280,767	26,926	0-10	535,295	33,337	0-06
Thumb-trimmed.....	419,130	87,769	0-21	662,709	142,405	0-21
Splittings only.....	210,056	176,785	0-84	164,734	137,248	0-83
Scrap.....	6,139,076	35,494	0-005	6,819,636	44,282	0-006
<b>Total.....</b>	<b>7,049,029</b>	<b>326,974</b>	<b>0-047</b>	<b>8,182,374</b>	<b>357,272</b>	<b>0-04</b>

Table 152.—Production in Canada and Exports of Mica, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	1,360	97,748	1,545	216,684	1,677	185,020
Ontario.....	1,989	54,515	1,980	110,290	2,414	172,252
<b>Total.....</b>	<b>3,349</b>	<b>152,263</b>	<b>3,525</b>	<b>326,974</b>	<b>4,091</b>	<b>357,272</b>
<b>EXPORTS—</b>						
Cobbled.....	74	45,151	85	40,286	88	52,527
Splittings.....	286	366,974	502	624,110	285	424,503
Scrap and waste.....	3,473	41,949	4,855	70,866	4,519	63,610
Plate and manufactures.....		10,438		22,014		3,326
<b>Total.....</b>		<b>464,512</b>		<b>757,276</b>		<b>543,966</b>

Table 153.—World's Production of Mica<sup>1</sup>, 1913, 1920-1924

(Long tons)

Country	1913	1920	1921	1922	1923	1924
<i>British Empire</i>						
Canada.....	986	(a) 1,966	627	2,990	2,331	3,653
India.....	2,288	(b) 3,826	1,624	1,504	1,693	(c)
Southern Rhodesia.....		(b) 88	76	59	81	150
Tanganyika Territory.....		(b) 27	3	11	32	(c)
Union of South Africa.....		6	2	1	13	(c)
Ceylon.....		(g) 15	5	1	1	(c)
Australia.....		1		4		(c)
<i>Foreign Countries</i>						
United States.....	5,511	(e) 5,862	2,632	6,411	8,112	4,500
Madagascar.....		49	152	91	162	(c)
Argentina (exports).....	6	(b) 269	145	63	100	(c)
Brazil.....	10	(b) 67	45	66	(e)	(c)
Japan.....				15	(c)	(c)
Guatemala.....		(f) 4	(g)	4		
Mexico.....		(f) 4	(g)			
Norway.....		(f) 31	2	1		
Roumania.....		133				
Russia.....				8	(c)	(c)
Spain.....		5	2		3	(c)
Sweden.....				8	(c)	(c)
<b>Total.....</b>	<b>8,801</b>	<b>12,353</b>	<b>5,315</b>	<b>11,327</b>	<b>12,528</b>	<b>8,303</b>

(1) Source—Imperial Mineral Resources Bureau.

(a) Sales.

(b) Exports.

(c) Data not available.

(d) Including 1 long ton produced in Northern Rhodesia.

(e) Sales chiefly of ton low grade mica.

(f) Imports into the United States from the country specified.

(g) Less than  $\frac{1}{2}$  ton.

(h) Estimated.

## MINERAL WATERS

Mineral waters produced in Canada during 1924 amounted to 209,353 imperial gallons valued at \$15,421 as compared with 232,451 gallons valued at \$16,455 in the previous year. Mineral springs in Ontario and Quebec contributed the whole of the Canadian production. In the present compilation there has been included a record of all natural mineral waters sold to the general public for medicinal purposes. No record has been kept of the shipments made of ordinary spring waters. The values given do not take into account any mineral waters used at the springs for drinking or bathing purposes but include only the shipments from the springs in bottles or other containers.

Table 154.—Production of Mineral Waters in Canada, 1888-1924

Year	Imp. Gals.	Value	Year	Value	Year	Imp. Gals.	Value
		\$		\$			\$
1888.....	124,850	11,456	1900.....	75,000	1913.....		173,677
1889.....	424,000	37,360	1901.....	100,000	1914.....		134,111
1890.....	561,165	66,031	1902.....	100,000	1915.....		115,274
1891.....	427,485	54,268	1903.....	100,000	1916.....		127,806
1892.....	640,380	75,348	1904.....	100,000	1917.....		145,814
1893.....	725,096	108,347	1905.....	100,000	1918.....		154,468
1894.....	767,460	110,040	1906.....	100,000	1919.....		71,015
1895.....	739,382	126,048	1907.....	136,020	1920.....		24,582
1896.....	706,372	111,736	1908.....	151,953	1921.....	328,273	21,716
1897.....	749,691	141,477	1909.....	175,173	1922.....	221,433	14,220
1898.....	555,000	100,000	1910.....	199,563	1923.....	232,451	16,455
1899.....		100,000	1911.....	223,758	1924.....	209,353	15,421
			1912.....	172,465			
					Total.....		3,799,602

Table 155.—Production in Canada, Imports and Exports of Mineral Waters, 1922, 1923 and 1924

	1922		1923		1924	
	Imp. Gals.	Value	Imp. Gals.	Value	Imp. Gals.	Value
		\$		\$		\$
PRODUCTION, by provinces—						
Quebec.....	12,161	3,692	5,421	2,408	7,683	2,288
Ontario.....	209,272	10,528	227,030	14,047	201,670	13,133
<b>Total.....</b>	<b>221,433</b>	<b>14,220</b>	<b>232,451</b>	<b>16,455</b>	<b>209,353</b>	<b>15,421</b>
IMPORTS—Mineral and aerated waters.....		156,420		169,473		181,107
EXPORTS—Mineral and aerated waters.....		123,555		192,261		109,735

## NATRO-ALUNITE

The Alunite Chemical Corporation, Limited, operated a deposit of natro-alunite at Kyuquot Sound on the west coast of Vancouver Island, B.C., for a short time during the month of April in 1923, and shipped 15 tons valued at \$750, but no production was reported for 1924. The treatment of this material consists in crushing, grinding and roasting the crude material; the resultant product, calcined alunite may be used as a fertilizer because of the potash content.

## NATURAL GAS

The production of natural gas in Canada in 1924 amounted to 14,881,336 thousand cubic feet valued at \$5,708,636 as compared with 15,960,583 thousand cubic feet valued at \$5,884,618 in 1923. Ontario and Alberta are the two principal areas where this natural resource occurs and in 1924 these provinces produced about equal amounts. The unit value received for natural gas in Ontario is twice as much as that received in Alberta. New Brunswick is the next greatest producer and Manitoba usually reports a small production.

In Alberta and Ontario the manufacture of carbon black from natural gas is a promising new industry and the Dominion Government has already published regulations covering the manufacture of this product from natural gas.

Table 156.—Production of Natural Gas in Canada, 1892-1924

Year	Value	Year	Value	Year	M. cu. ft.	Value
	\$		\$			\$
1892.....	150,000	1903.....	202,210	1914.....	21,692,504	3,484,727
1893.....	376,233	1904.....	328,376	1915.....	20,124,162	3,706,035
1894.....	313,754	1905.....	379,561	1916.....	25,476,458	3,958,029
1895.....	423,032	1906.....	553,523	1917.....	27,408,940	5,045,298
1896.....	276,301	1907.....	815,032	1918.....	20,140,306	4,350,940
1897.....	325,873	1908.....	1,012,660	1919.....	19,937,769	4,176,037
1898.....	322,123	1909.....	1,207,029	1920.....	16,845,518	4,232,642
1899.....	387,271	1910.....	1,346,471	1921.....	14,077,601	4,594,164
1900.....	417,094	1911.....	1,907,873	1922.....	14,682,651	5,846,501
1901.....	339,476	1912.....	2,362,700	1923.....	15,960,583	5,884,618
1902.....	195,992	1913.....	2,309,381	1924.....	14,881,336	5,708,636
				<b>Total.....</b>		<b>66,969,397</b>

Table 157.—Production of Natural Gas in Canada, by Provinces, 1922, 1923 and 1924

Province	1922		1923		1924	
	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value
		\$		\$		\$
New Brunswick.....	753,898	148,040	640,300	126,068	599,972	113,577
Ontario.....	8,060,114	4,076,296	8,128,413	4,066,244	7,150,078	3,793,381
Alberta.....	5,868,439	1,622,105	7,191,670	1,692,246	7,131,086	1,796,618
Manitoba.....	200	60	200	60	200	60
<b>Total.....</b>	<b>14,682,651</b>	<b>5,846,501</b>	<b>15,960,583</b>	<b>5,884,618</b>	<b>14,881,336</b>	<b>5,708,636</b>

## PEAT

No production of peat was reported for the year 1924. Experimental work was carried on at Alfred, Ontario, for several years under the joint auspices of the governments of Canada, and of Ontario. Recently, the experimental stage having been passed, the plant was sold to a company and it is expected that production on a commercial scale will soon be undertaken.

Table 158.—Production of Peat in Canada, 1900-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1900.....	406	1,200	1908.....	60	180	1916.....	300	1,500
1901.....	220	600	1909.....	60	240	1917-18.....		
1902.....	475	1,663	1910.....	841	2,604	1919.....	986	6,561
1903.....	1,100	3,300	1911.....	1,463	3,817	1920.....	4,550	18,650
1904.....	800	2,400	1912.....	700	2,900	1921.....	1,666	6,664
1905.....	80	260	1913.....	2,600	10,100	1922.....	3,000	14,500
1906.....	474	1,422	1914.....	685	2,470	1923-24.....		
1907.....	50	200	1915.....	300	1,050	<b>Total.....</b>	<b>20,810</b>	<b>82,281</b>

## CRUDE PETROLEUM

Production of crude petroleum in Canada in 1924 amounted to 160,773 barrels valued at \$467,400 as compared with 170,169 barrels valued at \$522,018 in 1923, a decrease of approximately 9,000 barrels.

The average values received, per barrel, in the producing provinces in 1924 were as follows: New Brunswick, \$3.83; Ontario, \$2.86; and Alberta, \$4.90.

A section from "An Act respecting the payment of Bounties on Petroleum", as enacted on June 30, 1923, which is administered by the Department of Trade and Commerce, is given here, as important changes have been made in the duration and the rates of payment.

The said bounty shall be paid during the periods and at the rates following, that is to say:—

"On such crude petroleum produced on or before the thirtieth day of June, one thousand nine hundred and twenty-four, a bounty of one and one-half cents per imperial gallon shall be paid;

On such crude petroleum produced on or after the first day of July, one thousand nine hundred and twenty-four, and not later than the thirtieth day of June, one thousand nine hundred and twenty-five, a bounty of three-quarters of one cent per imperial gallon shall be paid;

On such crude petroleum produced on and after the first day of July, one thousand nine hundred and twenty-five, no bounty shall be paid."

The value of importations of petroleum and its products into Canada during 1924 increased approximately \$5,000,000 over the total in the preceding year.

In the petroleum industry, Canadian interest centres in the refining end rather than in the production of crude oil. Canadian refineries treat annually about 5 million gallons of oil from Canadian wells and about 400 million gallons of imported oil. Production of gasoline at the refineries in Canada showed an increase over the production of this commodity in 1923, the total output being in excess of 160 million gallons, as compared with 124 million gallons in 1923. Imports of gasoline were also higher amounting to 73,757,441 gallons as compared with a total of 49,950,660 gallons in 1923. As the exports of gasoline and naphtha amounted to only 1,403,716 gallons, the apparent consumption of this motor fuel totalled 232,399,464 imperial gallons for the year. This marked an increase of about 60 million gallons above the amount used in 1923 when imports totalled only 49,950,660 gallons and production amounted to 125,195,005 gallons of which exports took 1,217,298 gallons.

**Table 159.—Production of Crude Petroleum in Canada, 1881-1924**

Year	Barrels*	Value	Year	Barrels*	Value	Year	Barrels*	Value
		\$			\$			\$
1881.....	368,987		1896.....	726,822	1,155,647	1911.....	291,092	357,073
1882.....	389,573		1897.....	709,857	1,011,546	1912.....	243,336	345,050
1883.....	472,866		1898.....	758,391	1,061,747	1913.....	228,080	406,439
1884.....	571,000		1899.....	808,570	1,202,020	1914.....	214,805	343,124
1885.....	587,563		1900.....	710,498	1,151,607	1915.....	215,464	300,572
1886.....	584,661	525,655	1901.....	622,392	1,008,275	1916.....	198,123	392,284
1887.....	713,728	556,708	1902.....	530,624	951,190	1917.....	213,832	542,239
1888.....	695,203	713,695	1903.....	486,637	1,048,874	1918.....	304,741	885,143
1889.....	704,690	653,600	1904.....	503,474	935,895	1919.....	240,466	736,324
1890.....	795,030	902,734	1905.....	634,095	856,028	1920.....	196,251	822,235
1891.....	755,298	1,010,211	1906.....	569,753	761,760	1921.....	187,541	641,533
1892.....	779,753	984,438	1907.....	788,872	1,057,088	1922.....	179,068	611,176
1893.....	798,406	874,255	1908.....	527,987	747,102	1923.....	170,169	522,018
1894.....	829,104	835,322	1909.....	420,755	559,604	1924.....	160,773	467,400
1895.....	726,138	1,086,738	1910.....	315,895	388,550			
<b>Total.....</b>							<b>21,929,763</b>	<b>†29,412,299</b>

\*35 imperial gallons. †From 1886.

**Table 160.—Production of Crude Petroleum in Canada by Provinces, 1923 and 1924**

Province	1923				1924			
	Barrels	Value less bounty	Bounty paid	Total value	Barrels	Value less bounty	Bounty paid	Total value
		\$	\$	\$		\$	\$	\$
New Brunswick.....	8,826	31,992	3,650	35,642	5,561	18,520	2,793	21,313
Ontario—								
Petrolia and Enniskillen.....	64,159	157,830	33,683	191,513	60,916	149,427	24,327	173,754
Oil Springs.....	39,090	98,898	20,522	119,420	41,320	104,250	16,816	121,066
Moore Township.....	4,790	11,783	2,515	14,298	4,483	10,997	2,069	13,066
Sarnia Township.....	2,387	5,871	1,253	7,124	2,068	5,073	1,033	6,106
Plympton Township.....	872	2,146	458	2,604	525	1,288	234	1,522
Bothwell.....	27,665	68,056	14,524	82,580	26,700	65,655	10,728	76,383
Tilbury East.....	1,263	3,106	663	3,769				
West Dover.....	6,306	15,513	3,311	18,824	3,898	9,585	1,740	11,325
Raleigh Township.....	302	744	159	902	834	2,047	299	2,346
Dutton.....	315	775	165	941				
Onondaga.....	237	583	124	708	456	1,109	213	1,322
Moza Township.....	10,319	25,386	5,418	30,803	8,862	21,074	3,605	24,679
Thamesville.....	567	1,396	298	1,694				
Dunwich.....					1,351	3,309		3,309
Elgin Township.....	279	685	146	831				
Romney Township.....	849	2,138		2,138	2,955	7,074		7,074
Total for Ontario.....	159,400	394,910	83,239	478,149	154,368	380,888	61,064	441,952
Alberta.....	1,943	8,126	101	8,227	844	4,135		4,135
Canada.....	170,169	435,028	86,990	522,018	160,773	403,543	63,857	467,400

Table 161.—Imports into Canada and Exports of Petroleum and its Products, 1922, 1923 and 1924

	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Crude petroleum in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories..... Gals.	419,559,952	21,602,247	392,185,557	17,449,032	465,958,509	20,260,488
Crude petroleum, gas oils other than naphtha, benzene and gasoline lighter than .8235 but not less than .775 specific gravity at 60 degrees. " "	913,415	76,900	475,842	38,908	139,745	10,875
Petroleum, crude, not in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories— (From May 12, 1923)..... " "			15,922	966	55,758	3,953
Petroleum (not including crude petroleum imported to be refined or illuminating or lubricating oils) .8235 specific gravity or heavier at 60 degrees temperature..... " "	71,891,597	3,014,390	108,506,938	4,206,193	94,104,526	4,122,333
Petroleum, imported by miners or mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments..... " "	17,672	4,075	32,960	5,913	139,473	35,880
<b>KEROSENE AND ILLUMINATING OILS</b>						
Coal oil and kerosene, distilled, purified or refined..... " "	3,673,234	314,514	4,118,943	322,434	5,410,973	444,646
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon..... " "	99,497	50,045	42,474	16,296	10,655	4,215
Coal oil and kerosene, distilled, known as "engine distillates", .725 specific gravity and heavier, but not heavier than .770 specific gravity at 60 degrees temperature. " "			8,203	962	20,420	2,942
<b>LUBRICATING OILS</b>						
Lubricating oils, composed wholly or in part of petroleum, and costing less than 20 cents per gallon..... " "	3,898,930	720,223	4,295,635	737,053	3,975,337	728,250
Lubricating oils, n.o.p..... " "	3,211,124	1,412,473	3,901,048	1,573,897	4,521,086	1,714,403
<b>OTHER OILS</b>						
Gasoline under .725 specific gravity at 60 degrees temperature..... " "	24,743,275	5,411,972	35,945,251	5,134,286	56,389,078	7,138,561
Gasoline .725 specific gravity but not heavier than .770 specific gravity at 60 degrees temperature (a)..... " "	13,466,769	2,579,643	13,927,843	1,993,596	17,084,248	2,166,847
Gasoline, n.o.p..... " "	3,902,204	769,309	177,566	32,750	284,115	38,745
All other oils, n.o.p..... " "	144,927	60,469	248,888	86,958	260,901	119,088
<b>OTHER PRODUCTS OF PETROLEUM</b>						
Grease, axle..... Lb.	2,851,550	177,575	2,981,849	176,216	2,853,720	165,694
Paraffine wax..... " "	870,564	51,032	1,034,921	63,695	837,317	65,782
Paraffine wax candles..... " "	199,762	39,299	176,487	32,516	202,565	36,884
Vaseline and all similar preparations of petroleum for toilet, medicinal or other purposes.....		242,743		268,267		195,457
Petroleum, products of, n.o.p..... Gals.	1,330,170	298,815	1,712,665	299,388	1,298,590	242,996
<b>Total.....</b>		<b>36,816,724</b>		<b>32,439,326</b>		<b>37,498,039</b>
<b>EXPORTS—</b>						
Oil, coal and kerosene, crude..... Gals.	7,036,627	288,828	2,384,899	138,381	18,263,236	529,497
Oil, coal and kerosene, refined..... " "	1,471,947	136,834	1,450,051	139,924	1,525,427	165,520
Oil, gasoline and naphtha..... " "	1,976,244	510,037	1,217,298	263,326	1,403,716	256,966
Oil, mineral, n.o.p..... " "	1,155,865	206,709	1,200,347	223,511	627,671	161,259
Wax, mineral..... Cwt.	15,615	45,526	66,274	206,575	33,171	147,810
<b>Total.....</b>		<b>1,187,934</b>		<b>971,717</b>		<b>1,261,052</b>

(a) From May 24, 1922.

**Petroleum Refinery Statistics.**—As a matter of interest there has been tabulated a record of the crude petroleum and other materials used in the oil refineries of Canada during the past three years and a list showing the quantities and values of the refined products made. Detailed statistics covering Canadian petroleum refineries will be found in the Bureau's report on the *Manufactures of Non-Metallic Minerals*.

**Table 162.—Materials Used and Products Made by the Oil Refineries of Canada, 1922, 1923 and 1924**

	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>MATERIALS USED—</b>						
Crude oil, product of Canadian wells..... Imp. gal.	5,849,442	514,746	5,906,028	458,609	5,172,903	403,099
Crude oil, imported..... " "	388,289,613	34,538,969	402,904,711	33,184,017	361,971,731	33,018,299
Sulphuric acid (66° Be) (Not made by firm reporting)..... Lb.	86,398,728	1,058,230	65,922,858	690,152	57,693,733	605,383
Sulphur (not used in acid manufacture)..... " "	84,260	2,407	61,814	1,733	90,955	2,625
Caustic soda..... " "	3,750,331	174,922	3,084,651	128,421	3,796,826	146,842
Litharge..... " "	518,291	44,906	328,185	28,794	315,723	30,197
Clay..... " "	159,840	2,733	480,375	7,929		
Other materials.....		1,792,967		1,935,651		2,462,847
<b>Total.....</b>		<b>38,129,880</b>		<b>36,435,306</b>		<b>36,669,292</b>
<b>PRODUCTS MADE—</b>						
Gasoline..... Imp. gal.	143,959,893	34,428,189	124,156,380	22,153,254	160,045,739	25,799,219
Petroleum spirits..... " "	3,124,828	561,498	1,038,625	144,484	788,571	132,093
Kerosene..... " "	76,521,560	9,628,804	67,396,674	8,774,371	61,308,467	7,486,042
Fuel and gas oils..... " "	106,975,976	6,142,927	139,682,570	7,973,766	177,123,232	9,076,746
Lubricating oils..... " "	17,185,003	3,143,545	13,741,896	2,696,768	14,341,920	2,585,717
Grease..... Lb.	8,186,013	156,353	10,599,391	221,420	10,004,590	184,655
Petroleum coke..... Tons	70,422	597,806	34,020	300,524	38,102	270,403
Wax and candles..... Lb.	12,063,768	329,147	10,484,436	484,416	9,112,143	551,434
Other products.....		1,507,552		2,822,503		2,591,038
<b>Total.....</b>		<b>56,495,821</b>		<b>45,571,506</b>		<b>48,677,347</b>

### PHOSPHATE

No phosphate rock was mined in Canada during 1924. Imports of phosphate rock amounted to 11,718 tons valued at \$56,965 and imports of acid phosphate amounted to 1,825 tons valued at \$230,676.

**Table 163.—Production of Phosphate in Canada, 1886-1924**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	20,495	304,338	1900.....	1,415	7,105	1913.....	385	3,643
1887.....	23,690	319,815	1901.....	1,033	6,280	1914.....	954	7,275
1888.....	22,485	242,285	1902.....	856	4,953	1915.....	217	2,502
1889.....	30,988	316,662	1903.....	1,329	8,214	1916.....	203	2,514
1890.....	31,753	361,045	1904.....	817	4,590	1917.....	149	1,486
1891.....	23,588	241,603	1905.....	1,300	8,425	1918.....	140	1,206
1892.....	11,932	157,424	1906.....	850	6,375	1919.....	24	331
1893.....	8,198	70,942	1907.....	824	6,018	1920.....		
1894.....	6,861	41,166	1908.....	1,596	14,794	1921.....	30	450
1895.....	1,822	9,565	1909.....	998	8,054	1922.....	190	1,796
1896.....	570	3,420	1910.....	1,478	12,578	1923.....	30	600
1897.....	908	3,984	1911.....	621	5,206	1924.....		
1898.....	733	3,665	1912.....	164	1,640			
1899.....	3,000	18,000				<b>Total.....</b>	<b>202,626</b>	<b>2,209,949</b>

Table 164.—Production in Canada, Imports and Exports of Phosphate, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value \$	Tons	Value \$	Tons	Value \$
<b>PRODUCTION—</b>						
Quebec.....	131	1,320	30	600		
Ontario.....	59	476				
<b>Total.....</b>	<b>190</b>	<b>1,796</b>	<b>30</b>	<b>600</b>		
<b>IMPORTS—</b>						
Phosphate rock.....	11,515	56,353	15,845	86,192	11,718	56,965
Acid phosphate (a).....	1,756	224,577	1,524	189,625	1,825	230,676
Phosphorus.....	68	55,540	74	68,684	55	56,455
Phosphor tin and bronze.....	135	112,417	223	195,491	191	148,856
Superphosphate (b).....		403,621		278,301		405,937
<b>EXPORTS—Phosphate rock.....</b>						

(a) Probably refined phosphate of lime and phosphate of soda.

(b) Probably for use as fertilizer.

## PYRITES

The production of pyrites ore (iron and copper sulphides) in Canada during 1924 was 23,552 tons valued at \$95,620. Of this, Quebec produced 4,032 tons; Ontario, 11,429 tons and British Columbia, 8,091 tons. The average price for this material was in the neighbourhood of \$4.07 per ton. The sulphur content of the shipments amounted to 9,742 tons. The pyrites shipped from Quebec contained 59.06 per cent sulphur; that shipped from Ontario varied from 36 to 42 per cent; and that which was credited to British Columbia mines ranged between 43 and 45 per cent.

According to Customs' records, the sulphur content of the ores exported was 219 tons valued at \$1,081.

Table 165.—Production of Pyrites in Canada, 1886-1924

Year	Tons	Value \$	Year	Tons	Value \$	Year	Tons	Value \$
1886.....	42,906	193,077	1900.....	40,031	155,164	1913.....	158,566	521,181
1887.....	38,043	171,194	1901.....	35,261	130,544	1914.....	228,314	744,508
1888.....	63,479	285,656	1902.....	35,616	138,939	1915.....	286,038	935,190
1889.....	72,225	307,292	1903.....	33,982	127,713	1916.....	308,251	1,084,065
1890.....	49,227	123,067	1904.....	37,180	134,033	1917.....	418,649	1,610,762
1891.....	67,731	203,193	1905.....	33,339	125,486	1918.....	411,616	1,705,219
1892.....	59,770	179,310	1906.....	42,743	169,990	1919.....	176,487	522,704
1893.....	58,542	175,626	1907.....	46,243	212,491	1920.....	174,744	719,110
1894.....	40,527	121,581	1908.....	47,336	224,824	1921.....	33,368	116,326
1895.....	34,198	102,594	1909.....	64,644	222,814	1922.....	18,143	74,303
1896.....	33,715	101,155	1910.....	53,870	187,062	1923.....	28,591	113,020
1897.....	38,910	116,730	1911.....	82,666	365,820	1924.....	28,552	95,620
1898.....	32,218	128,872	1912.....	81,526	314,081			
1899.....	27,687	110,748				<b>Total.....</b>	<b>3,558,934</b>	<b>13,121,094</b>

Table 166.—Production in Canada, Imports and Exports of Pyrites, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value \$	Tons	Value \$	Tons	Value \$
<b>PRODUCTION—</b>						
Quebec.....					4,032	10,619
Ontario.....	11,235	39,763	25,134	99,716	11,429	44,542
British Columbia.....	6,908	34,540	3,457	13,304	8,091	40,459
<b>Total.....</b>	<b>18,143</b>	<b>74,303</b>	<b>28,591</b>	<b>113,020</b>	<b>23,552</b>	<b>95,620</b>
Sulphur content.....	6,900		11,073		9,742	
<b>IMPORTS—</b>						
Brimstone or sulphur, crude or in roll or flour.....	123,158	1,700,604	135,767	1,803,550	131,546	1,776,978
<b>EXPORTS—</b>						
Sulphur contained in pyrites.....			9,670	46,514	219	1,081

**Sulphuric Acid.**—Statistics collected from 7 firms manufacturing sulphuric acid in Canada during 1924 gave the production of the commodity in terms of the standard grades of 50° Bé, 60° Bé and 66° Bé. For comparative purposes it has been deemed advisable to reduce the first two grades to their equivalent in 66° Bé acid.

Importations of sulphuric acid into Canada during 1924 were comparatively negligible; exports at 7,678 tons were lower than in the preceding year.

**Table 167—Production,\* Imports and Exports of Sulphuric Acid, 1922, 1923 and 1924**

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Sulphur used.....	15,467	316,623	21,564	434,687	16,065	295,101
Pyrites used.....	15,961	81,868	18,615	89,287	19,706	91,202
Acid made.....	69,281	1,389,716	79,188	1,408,265	71,759	1,283,094
<b>IMPORTS of acid.....</b>	2,687	47,707	291	10,008	47	7,609
<b>EXPORTS of acid.....</b>	1,490	29,129	12,203	200,206	7,678	132,139

\* Expressed in terms of 66° Bé acid. Record includes a small production of oleum and other grades, the strength of which is not specified. An approximate estimate of production in terms of 50° acid will be obtained by increasing these figures by 50 per cent.

### QUARTZ

Quartz production in 1924 amounted to 150,896 tons valued at \$323,156 as compared with 264,076 tons valued at \$599,250 in 1923. This was a decrease of 42·8 per cent in quantity and 46·0 per cent in value.

Ontario's production dropped to less than half the total reported in the preceding year, but the output from Quebec deposits showed a slight advance over the 1923 figures. British Columbia's output was only slightly below the total reported in 1923.

Imports of crystallized quartz into Canada during 1924 amounted to 1,941 tons with a valuation of \$49,552, and flint importations were received at 6,016 tons valued at \$64,753.

**Table 168.—Production of Quartz in Canada, 1890-1924**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	200	1,000	1907.....	56,585	124,148	1917.....	216,288	496,182
1891-2.....			1908.....	44,741	52,830	1918.....	268,155	629,813
1893.....	100	500	1909.....	56,924	71,285	1919.....	94,991	527,635
1894-5.....			1910.....	88,205	91,951	1920.....	128,295	467,821
1896.....	10	50	1911.....	60,526	83,865	1921.....	100,350	312,947
1897.....			1912.....	100,242	195,216	1922.....	109,947	208,598
1898.....	284	570	1913.....	78,261	169,842	1923.....	264,076	599,250
1899.....	600	1,260	1914.....	54,148	84,553	1924.....	150,896	323,156
1900-1905.....			1915.....	127,108	205,153			
1906.....	48,376	65,765	1916.....	136,745	251,226	<b>Total.....</b>	<b>2,186,053</b>	<b>4,964,646</b>

**Table 169.—Production in Canada, and Imports of Quartz, 1922, 1923 and 1924**

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	10,994	53,023	13,376	68,936	17,893	87,267
Ontario.....	81,528	118,054	225,110	483,285	111,645	192,855
British Columbia.....	17,425	37,521	25,590	47,029	21,358	43,034
<b>Total.....</b>	<b>109,947</b>	<b>208,598</b>	<b>264,076</b>	<b>599,250</b>	<b>150,896</b>	<b>323,156</b>
<b>IMPORTS—</b>						
Silica.....	1,058	25,248	2,303	57,940	1,941	49,552
Flint.....	6,633	92,094	6,327	81,704	6,016	64,753

## SALT

The total Canadian output of salt in 1924 was 210,737 tons, of which quantity 207,979 tons worth \$1,374,780 was marketed. The shipments for the year were slightly higher than in 1923, while the sales value declined 19·7 per cent. Plants operated in Ontario contributed 98 per cent of the total production, the balance, or 4,551 tons, was made up of shipments from the Malagash mine in Nova Scotia. The figures for 1923 showed that the total Canadian output of salt was 206,985 tons and of this 202,397 tons was sold for which \$1,713,516 was received.

Imports of salt, all grades, into Canada during the year were equal to 87·8 per cent of the total Canadian production, and the Customs records show that 182,886 tons valued at \$1,134,390 was brought into Canada during 1924.

Table 170.—Production of Salt in Canada, 1886-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	62,359	227,195	1900.....	62,055	279,458	1913.....	100,791	491,280
1887.....	60,173	166,394	1901.....	59,428	262,328	1914.....	107,038	493,648
1888.....	59,070	185,460	1902.....	64,456	292,581	1915.....	119,900	600,226
1889.....	32,832	129,547	1903.....	62,452	297,517	1916.....	132,903	717,653
1890.....	43,754	198,857	1904.....	69,477	321,778	1917.....	138,909	1,047,792
1891.....	45,621	161,179	1905.....	67,340	320,858	1918.....	131,727	1,285,039
1892.....	45,486	162,041	1906.....	76,720	329,130	1919.....	148,301	1,397,929
1893.....	195,324	195,926	1907.....	72,697	342,315	1920.....	209,855	1,544,724
1894.....	57,199	170,687	1908.....	79,975	378,798	1921.....	164,658	1,673,685
1895.....	52,376	160,455	1909.....	84,037	415,219	1922.....	181,794	1,628,323
1896.....	43,960	169,693	1910.....	84,092	409,624	1923.....	202,397	1,713,516
1897.....	51,348	225,730	1911.....	91,582	443,004	1924.....	207,979	1,374,780
1898.....	57,142	248,639	1912.....	95,053	459,582			
1899.....	59,339	254,390				<b>Total.....</b>	<b>3,547,998</b>	<b>21,176,980</b>

Table 171.—Production of Salt in Canada, by Grades, 1923 and 1924

	1923				1924			
	Quantity manu-actured	Quantity sold	Value of salt sold (not including packages)	Stocks on hand at end of year	Quantity manu-actured	Quantity sold	Value of salt sold (not including packages)	Stocks on hand at end of year
	Tons	Tons	\$	Tons	Tons	Tons	\$	Tons
Table and dairy.....	42,371	42,468	764,293	568	41,198	41,134	663,296	607
Common fine.....	41,806	36,924	308,039	10,891	37,701	36,706	272,301	8,462
Common coarse.....	31,057	31,282	271,146	2,106	36,205	34,345	266,895	3,152
Land salt.....	3,744	3,713	17,628	106	4,920	4,862	23,889	108
Other grades.....	7,908	7,911	72,063	563	7,654	7,873	65,340	318
Brine for chemical works (Salt equivalent sold or used).....	80,099	80,099	280,347	.....	83,059	83,059	83,059	.....
<b>Total.....</b>	<b>206,985</b>	<b>202,397</b>	<b>1,713,516</b>	<b>14,234</b>	<b>210,737</b>	<b>207,979</b>	<b>1,374,780</b>	<b>12,647</b>
<b>Value of packages.....</b>			<b>\$533,822</b>				<b>\$548,631</b>	

Table 172.—Imports, Exports and Consumption of Salt in Canada, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION.....</b>	<b>181,794</b>	<b>1,628,323</b>	<b>202,397</b>	<b>1,713,516</b>	<b>207,979</b>	<b>1,374,780</b>
<b>IMPORTS—</b>						
Fine, in bulk <sup>1</sup> .....	61,913	321,380	65,118	317,773	68,199	332,649
In bags, barrels <sup>2</sup> .....	51,772	596,513	38,799	455,306	43,508	462,184
All other <sup>3</sup> .....	82,185	355,890	67,941	294,526	71,179	339,557
<b>Total imports.....</b>	<b>195,870</b>	<b>1,273,783</b>	<b>171,858</b>	<b>1,067,605</b>	<b>182,886</b>	<b>1,134,390</b>
<b>EXPORTS.....</b>	<b>740</b>	<b>10,053</b>	<b>861</b>	<b>10,201</b>	<b>965</b>	<b>10,795</b>
<b>CONSUMPTION OF SALT<sup>4</sup>.....</b>	<b>376,924</b>	<b>2,892,054</b>	<b>373,394</b>	<b>2,770,920</b>	<b>389,900</b>	<b>2,498,375</b>

<sup>1</sup>Duty 5 cents per 100 pounds: <sup>2</sup>Duty 7½ cents per 100 pounds: <sup>3</sup>Free—Imported for use of sea or gulf fisheries.  
<sup>4</sup>Sum of production and imports, less exports.

Table 173.—World's Production of Salt 1913, 1920-1924

(Metric tons)

Country (a)	*1913	*1920	*1921	*1922	1923	1924
North America—						
British West Indies.....	Not available					
Bahamas.....	"	(b) 1,830	(b) 3,200	2,100	Not available	
Ragged Islands (b).....	"	509	Not available			
Turks and Carcos Islands (b).....	"	48,394	Not available	46,939	41,320	
Canada.....	91,436	190,376	149,374	164,920	183,612	(r) 188,729
Dutch West Indies (b).....	13,417	25,524	17,810	18,459		
Mexico (c).....	67,000	67,000	67,000	67,000	Not available	
Republic of Panama (b).....	Not available	826	677	826	"	"
United States./Rock salt.....	963,689	1,460,731	1,335,891	1,766,392	1,908,361	
{Other.....	3,405,201	4,744,406	3,182,912	4,395,945	4,560,532	
South America—						
Argentina (d).....	54,917	82,464	75,968	93,698	Not available	
Chile.....	19,558	33,951	39,466	33,743	"	"
Colombia (c).....	29,000	29,000	29,000	29,000	"	"
Peru.....	24,433	27,172	26,350	26,126	26,515	
Venezuela.....			Data not available			
Europe—						
Austria (e)/Rock salt.....	128,734	2,455	1,815	2,328	1,520	
{Other (f).....	236,018	79,431	75,236	85,695	81,748	
Bosnia Herzegovina (g).....	27,282	Now part of Yugoslavia				
Czecho-Slovakia.....	See Austria-Hungary	30,990	91,200	128,179	134,042	
France/Rock salt and salt from springs.....	899,502	840,001	793,151	541,340	(o) 1,145,120	
{Other.....	382,476	432,776	212,251	238,250		
Germany/Rock salt.....	1,391,738	2,596,825	1,655,753	2,319,896	768,762	
{Other.....	675,900	335,900	304,466	360,464	Not available	
Greece.....	19,215	57,285	65,000	67,500	"	
Hungary/Rock salt.....	190,126				"	
{Other.....	66,322	Data not available				
Italy/Rock salt.....	41,323	46,989	45,440	49,802	52,739	
{Other.....	602,755	675,129	463,151	740,507	711,713	
Netherlands, Rock salt.....		24,857	25,465	28,334	26,386	
Poland.....	See Russia	245,604	301,612	295,403	362,323	
Portugal (b).....	Not available	118,368	Data not available			
Rumania.....	335,000	246,977	232,818	285,212	306,526	
Russia (h)/Rock salt.....	556,163	579,162	983,676	789,516	Not available	
{Other.....	1,439,329				available	
Spain/Rock salt.....	26,238	62,647	37,996	114,400	98,591	
{Other.....	584,191	928,898	475,143	566,480	617,035	
Switzerland.....	515,000	448,000	339,000	Not available	Not available	
United Kingdom/Rock salt.....					49,697	
{Other ".....					1,977,327	
Great Britain and Isle of Man/Rock salt.....	173,929	86,358	24,525	26,998		
{Other ".....	2,065,818	2,083,194	1,368,535	1,874,434		
Ireland/Rock salt.....	44,087	23,460	11,760	Not available		
{Other ".....				available		
Yugoslavia.....	No data of brine salt available. Production included with G.B.					
See Austria.....		23,400	34,922	43,872		
Asia—						
India/Rock salt.....					121,594	
{Other ".....					1,809,744	
British India (including Aden/Rock salt.....	163,770	213,207	150,414	210,639		
from 1913-1922) {Other ".....	1,333,063	1,443,079	1,407,881	1,469,804		
Ceylon.....	Not available	16,775	13,952	39,623		
China (including Kwangtung) (i).....	"	2,104,000	2,075,000	Not available	(p) 2,032,100	
Chosen (j).....	"	54,921	Not available			
Cyprus (b).....	"	625	899	14,247	778	
French Indo-China, Sea salt.....					(q) 11,395	
Japan—Japan proper (k).....	640,007	(e) 543,956	515,103	Not available	Not available	
Taiwan.....	74,059	51,976	101,540	"		
Portuguese India (c).....	12,000	12,000	12,000	12,000	(b) 12,193	
Siam (b).....	Not available	50,737	29,824	26,542	32,948	

Table 173.—World's Production of Salt 1913, 1920-24—Continued

(Metric tons)

Country (a)	*1913	*1920	*1921	*1922	1923	1924
<b>Africa—</b>						
Algeria.....	27,000	28,169	18,255	20,208	Not available	
Belgian Congo (c).....	80	80	80	80	"	"
British Somaliland (b).....	Not available	501	906	1,572		
Egypt (b).....	"	225,811	153,651	186,793	Not available	
Eritrea.....	20,000	20,000	20,000	20,000	"	"
Mauritius (c).....	Not available	1,830	1,830	1,520	"	"
Nigeria Northern (c).....	400	400	400	400	"	"
Portuguese West Africa (Angola) (b).....	Not available	2,746	2,175	Not available		
Tunis.....	"	41,086	32,800	51,950	Not available	
Union of South Africa.....	43,537	80,603	62,033	Not available	"	"
<b>Oceania—</b>						
Australia (South Australia) (m).....	66,043	72,008	57,399	49,438 (n)	51,093	
Dutch East Indies.....	102,091	135,660	133,522	Not available	124,025	
Philippine Islands.....	19,500	62,383	Not available			
<b>Total.....</b>	<b>17,571,047</b>	<b>21,843,445</b>	<b>17,265,237</b>	<b>17,308,574</b>	<b>17,249,739</b>	<b>188,729</b>

\*From Mineral Resources of United States 1923, Pt. II.

1923 figures from The Mineral Industry of the British Empire and Foreign Countries 1921-1923.

(a) In addition to the countries shown in the table there are others in which salt is produced.

(b) Exports.

(c) Estimated annual production.

(d) Railway shipments.

(e) Exclusive of Bosnia-Herzegovina which is shown separately.

(f) Present Republic.

(g) In addition to these amounts there was reported salt in brine 532 hectoliters in 1913.

(h) Includes Asiatic Russia.

(i) Estimated on approximate gross revenue under Salt Gabelle.

(j) During the years 1909-1913 works were completed with an annual capacity of 100,000,000 kin (60,000 metric tons).

Additions were made in 1920 which increased the annual capacity to 119,000,000 kin (71,400 metric tons).

Financial and Economic Annual of Japan 1919 and 1922.

(k) Fiscal year ended March 31, following that stated.

(l) In addition there was reported a production of brine salt in Karafuto amounting to 927,905 hectoliters.

(m) The other states of Australia produce salt, but no figures are available.

(n) Australia.

(o) Rock salt and sea-salt.

(p) Approximate production.

(q) Exports.

(r) Figures from Dominion Bureau of Statistics report.

## SODIUM CARBONATE

The production of sodium carbonate in 1924 amounted to 510 tons as against 265 tons in 1923. Commercial deposits of this chemical now being worked occur on the line of the Pacific Great Eastern in the Lilloet District, British Columbia; the companies reporting, operated on an average of about 150 days during the summer of 1924.

Soda ash from salt brine is made in Canada on a very large scale by Brunner-Mond Co., Ltd., at Amherstburg, Ontario.

Sodium carbonate is used largely in chemical and hydro-metallurgical plants. Its principal uses are in the manufacture of glass, soap and paper, the bleaching and washing of linen, cotton, wool, etc., and the dyeing and printing of fabrics. Sodium carbonate has been utilized for some time as a means of removing, and of preventing the formation of boiler scale.

## SODIUM SULPHATE

Natural deposits of sodium sulphate in the province of Saskatchewan were operated during the year 1924. The total quantity of natural sodium sulphate sold during the year amounted to 1,083 tons valued at \$6,004, as against 733 tons valued at \$10,189 in the previous twelve months.

Table 174.—Production and Imports of Sodium Sulphate, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value \$	Tons	Value \$	Tons	Value \$
<b>PRODUCTION—</b>						
Natural Sodium Sulphate—						
Crude.....	164	1,100	210	1,050	965	4,825
Refined.....	340	10,880	523	9,139	118	1,179
Artificial Sodium Sulphate—						
Sodium sulphate.....	2,583	59,804	2,376	57,621	1,648	32,948
Glauber's salt.....	1,905	54,899	2,315	61,446	1,458	36,602
<b>IMPORTS—</b>						
Soda, bisulphate of, or nitre cake—(From May 12, 1923).....			20,152	91,940	18,859	87,961
Soda, sulphate of, crude, known as salt cake.....	39,472	830,515	30,967	684,604	36,022	673,322
Glauber's salt.....	172	5,554	521	11,542	906	14,684

## TALC AND SOAPSTONE

During 1924 there was a slight advance in the production of talc and soapstone in Canada. Sales for the year totalled 11,332 tons worth \$154,480 as against 10,366 tons valued at \$150,507 in 1923.

Import figures from April 1st, 1924, to the end of the calendar year showed a total of 2,969 tons of talc and soapstone brought into Canada in that period. Exports were slightly higher than those noted in 1923.

Ontario's production was derived from deposits in Hastings County. Most of the shipments from Quebec consisted of soapstone blocks for use in lining the alkali recovery furnaces of sulphate (kraft) pulp mills.

The following quotation is from a report on "*Talc and Soapstone*" by Hugh S. Spence, Mines Branch, Ottawa.

"The soapstone used in Canadian sulphate pulp mills is almost all imported Alberene stone from Virginia. It is difficult to obtain a structurally strong stone that will stand up under the combined attack of heat and alkali in such furnaces, and even the Alberene stone in general use has not a very long life. From six to nine months is stated to be a good average for an Alberene stone lining. The best soapstone for the purpose is obtained from Sweden, but the expense of importation prohibits its use.

The requirements in a soapstone for sulphate pulp furnaces are: fine to medium grain, compactness and homogeneous composition, and freedom from flaws and cracks. It should consist largely of talc, and contain no carbonates (dolomite, calcite) or pyrites. The stone should possess a massive, as opposed to a schistose texture, since schistose soapstone tends to spall readily and has little strength.

The discovery of a soapstone possessing the above characteristics, in Canada, would be of considerable benefit to domestic paper mills, since the quantity used is large and the cost of the imported stone high—from \$5 to \$6 per cubic foot, laid down.

The soapstone bricks used vary in size. Common dimensions are: 12 x 12 x 6 inches; 12 x 6 x 6 inches; 12 x 6 x 3 inches; 18 x 12 x 8 inches; 18 x 12 x 12 inches."

Table 175.—Production of Talc and Soapstone in Canada, 1886-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	50	400	1900.....	1,420	6,365	1913.....	12,250	45,980
1887.....	100	800	1901.....	259	842	1914.....	10,808	40,418
1888.....	140	280	1902.....	689	1,804	1915.....	11,885	40,554
1889.....	195	1,170	1903.....	990	2,739	1916.....	13,104	49,423
1890.....	917	1,239	1904.....	840	1,875	1917.....	15,803	76,539
1891.....			1905.....	500	1,800	1918.....	18,169	119,197
1892.....	1,374	6,240	1906.....	1,234	3,030	1919.....	18,642	116,295
1893.....	717	1,920	1907.....	1,534	4,602	1920.....	21,671	166,934
1894.....	916	1,640	1908.....	1,016	3,048	1921.....	10,124	144,565
1895.....	475	2,138	1909.....	4,350	10,300	1922.....	13,195	188,458
1896.....	410	1,230	1910.....	7,112	22,308	1923.....	10,366	150,507
1897.....	157	356	1911.....	7,300	22,100	1924.....	11,332	154,480
1898.....	405	1,000	1912.....	8,270	23,132			
1899.....	450	1,960				<b>Total.....</b>	<b>209,169</b>	<b>1,417,662</b>

Table 176.—Production of Talc and Soapstone in Canada and Exports of Talc, 1922, 1923 and 1924

	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Soapstone.....	167	5,800	607	20,843	449	20,273
Talc.....	13,028	182,658	9,759	129,664	10,883	134,207
<b>Total.....</b>	<b>13,195</b>	<b>188,458</b>	<b>10,366</b>	<b>150,507</b>	<b>11,332</b>	<b>154,480</b>
EXPORTS.....	9,854	143,938	7,233	99,239	7,876	98,571

Table 177.—\*World's Production of Talc and Soapstone 1913, 1920-1924.

(Metric tons)

Country	†1913	1920	1921	1922	1923	1924
Argentina (a).....		20	Data	not available		
Australia.....		214	61	203	207	
New South Wales (b).....		201	262	272	425	
South Australia (c).....		13	19	11	7	
Austria (d).....	o 16,005	6,894	8,031	13,511	7,489	
Canada (e).....	o 11,116	19,659	9,184	11,970	9,141 (r)	10,283
France (f).....	p 60,191	52,420	34,742	48,170	Not available	
Germany (Bavaria) (g).....	Not available	20,943	6,619	4,513	"	
India (h).....		3,740	2,103	921	"	
Italy (i).....	o 24,007	21,475	21,031	26,485	31,150	
Norway (j).....			2,810	7,821	Not available	
Spain (k).....	Not available	2,146	1,115	3,078	1,983	
Sweden (l).....		Not available	1,797	2,063	Not available	
Union of South Africa; Transvaal (m).....		619	375	309	322	
United Kingdom (n).....		367		51	Not available	
United States.....	q 159,558	191,084	110,663	180,242	178,435	184,955
<b>Total.....</b>	<b>270,877</b>	<b>319,782</b>	<b>198,793</b>	<b>299,609</b>	<b>229,152</b>	<b>195,238</b>

\* From Mineral Resources of the United States 1923, Part II.

† 1913 figures from the Mineral Industry 1923.

(a) Data furnished by Direccion general de minas, geologia é hidrologia Argentina.

(b) New South Wales Dept. Mines Ann. Reports.

(c) South Australia Dept. Mines Rev. Mining Operations.

(d) Exports. Aussenhandel Oesterreichs. Figures from 1920 represent second half year only.

(e) Canada Dept. of Mines, Mines Branch. Annual Reports. Dominion Bureau of Statistics Annual Report 1921. Preliminary Reports 1922-1923.

(f) 1919-1921, Statistique de l'industrie minérale en France. 1922 Information furnished by the Ministry of Public Works, Paris.

(g) 1919-1920 Consular rept. March 18, 1922. 1921-1922, Gluckauf.

(h) India Geol. Survey Rec.

(i) Rivista del servizio minerario. Information furnished by the Ispettorato generale delle miniere Rome.

(j) Norges Officielle Statistik. Norges Bergverksdrift.

(k) Estadística minera de Espana.

(l) Bergshantering. Figures for 1921-22 do not include small amounts for which only value is given.

(m) Annual Reports. See Mines, Union of South Africa Dept. Mines. Dept. Mines and Ind., Monthly Reports.

(n) 1919-1920, Mines and Quarries. 1921-1922, Annual Report. See Mines and H. M. Chief Inspector Mines.

(o) Talc.

(p) Talc, soapstone and asbestos.

(q) Talc and soapstone.

(r) Figures from Dom. Bureau of Statistics.

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

Although there was a slight decline in the value of structural materials produced in Canada during 1924 as compared with the previous year, activities in the building and construction industries were fairly well maintained. The total value of all structural materials and clay products produced in Canada during 1924 amounted to slightly over 35 million dollars as against 37 million dollars in the preceding year.

Construction of buildings and bridges, the building of roads, the maintenance of railroads and the development of power schemes, provide the necessary markets for the structural materials and clay products from Canadian quarries and plants. Fluctuations in construction operations are, therefore, reflected in the output of the commodities coming under the foregoing classification.

Except in the three western provinces and Prince Edward Island in each of which the production values for structural materials exceeded the totals for 1923, there was a decrease in the aggregate values, which lowered the total for Canada below the sum reported in the preceding year. Lower prices probably had some effect on the total values but the decreases seemed greater than might be accounted for by that fact alone, and indicated a slight general depression in construction operations.

Ontario and Quebec were the leaders in this industry; the value of their combined output totalled 28.70 million dollars in an aggregate for Canada of 35.38 million dollars. British Columbia products reached a value of 2.77 million dollars; Alberta and Manitoba outputs were each worth above one million dollars; Nova Scotia, New Brunswick, Saskatchewan and Prince Edward Island followed in the order named.

Among the structural materials and clay products the chief items were portland cement, and clay products; stone was next in point of value, followed by sand and gravel and lime.

Availability of hydro-electric power has proved a great stimulus to manufacturing in the southern part of Ontario and the mining industry's great progress in the northern part of the province, has followed the development of adequate power facilities in that area. Water-power development in Quebec has proceeded apace in recent years and has been the forerunner of industrial expansion on a magnificent scale. Recent road-building programs have made transportation a smaller factor in production and marketing costs, and at the same time have provided wider markets for stone, cement and other materials used in their construction.

Production of structural materials will undoubtedly increase as the years go by; advances in manufacturing and in the primary industries, particularly mining, will continue to provide extensive home markets for such materials, so that, while there may be years of apparent depression in construction, succeeding periods should more than compensate for such temporary setbacks.

**Table 178.—Production Values of Structural Materials and Clay Products in Canada, 1922, 1923 and 1924**

Province	1922	1923	1924
	\$	\$	\$
Prince Edward Island.....	14,003	4,429	4,588
Nova Scotia.....	602,109	654,191	528,309
New Brunswick.....	417,559	467,118	321,994
Quebec.....	11,605,462	11,968,006	11,272,539
Ontario.....	20,259,427	18,896,053	17,429,449
Manitoba.....	1,814,729	1,380,779	1,161,491
Saskatchewan.....	441,437	178,946	234,325
Alberta.....	1,845,990	1,568,760	1,657,742
British Columbia.....	2,534,025	2,633,099	2,770,432
<b>Canada.....</b>	<b>39,534,741</b>	<b>37,751,381</b>	<b>35,380,869</b>

Table 179.—Summary Statistics of Structural Materials and Clay Products, 1922, 1923 and 1924

Item		Production	Imports	Exports	Apparent Consumption
		\$	\$	\$	\$
Cement, portland.....	1922	15,438,481	83,037	699,738	14,821,780
	1923	15,064,661	75,294	824,811	14,315,144
	1924	13,398,411	69,320	213,845	13,253,886
Clay and clay products.....	1922	11,438,456	6,654,503	311,048	17,781,911
	1923	10,483,016	8,172,662	584,843	18,070,835
	1924	9,215,077	7,158,371	543,572	15,829,876
Lime.....	1922	3,165,005	27,942	270,724	2,922,223
	1923	3,266,608	55,820	428,286	2,894,142
	1924	3,178,541	46,578	411,122	2,813,997
Sand and gravel.....	1922	3,502,935	175,667	116,121	3,562,481
	1923	3,016,518	247,388	182,750	3,081,156
	1924	3,181,083	442,676	210,496	3,413,263
Slate.....	1922	14,871	286,095	.....	300,966
	1923	17,289	265,846	.....	283,135
	1924	.....	220,402	.....	220,402
Stone.....	1922	5,974,993	937,905	134,252	6,778,646
	1923	5,903,289	1,133,894	222,240	6,814,943
	1924	6,407,757	913,325	170,113	7,150,969
<b>Total.....</b>	<b>1922</b>	<b>39,534,741</b>	<b>8,165,149</b>	<b>1,531,883</b>	<b>46,168,007</b>
	<b>1923</b>	<b>37,751,381</b>	<b>9,950,904</b>	<b>2,242,930</b>	<b>45,459,355</b>
	<b>1924</b>	<b>35,380,869</b>	<b>8,850,672</b>	<b>1,549,148</b>	<b>42,682,393</b>

## CEMENT

Sales of cement in Canada in 1924 at 7,498,624 barrels were slightly less than the sales for the preceding year which amounted to 7,543,589 barrels. The total sales value in 1924 was \$13,398,411 as against \$15,064,661 in 1923. The total mill output amounted to 7,768,652 barrels, an increase of 80,456 barrels over the output for the preceding year.

Exports of Canadian cement amounted to only 153,520 barrels, a decrease of 340,231 barrels from the total for the preceding year. Importations amounted to 27,672 barrels, an increase of 10,000 barrels over the figures for 1923. While the apparent consumption of cement in Canada during 1924 amounted to 7,372,776 barrels, or 4.3 per cent more than in 1923, this total was 17.3 per cent less than the figures for 1913, when cement consumption reached its peak.

Ten plants, having in all a daily capacity of 34,235 barrels, were operated during the year. In addition to these there were ten other plants in Canada which were idle during the whole period. Ontario and Quebec were the principal producing provinces. Sales from Ontario plants amounted to 3,564,499 barrels, averaging \$1.59 per barrel; Quebec plants sold 2,758,316 barrels at an average price of \$1.74. The average selling price f.o.b. plant in the other provinces was as follows: Manitoba, \$2.60; Alberta, \$2.27; British Columbia, \$2.63. For Canada, the average was \$1.79 per barrel.

Table 180.—Production of Cement in Canada, 1887-1924

Year	Barrels	Value	Year	Barrels	Value	Year	Barrels	Value
		\$			\$			\$
1887.....	69,843	81,909	1900.....	417,552	662,910	1913.....	8,658,805	11,019,418
1888.....	50,668	35,593	1901.....	450,394	660,030	1914.....	7,172,480	9,187,924
1889.....	90,474	69,790	1902.....	722,525	1,127,550	1915.....	5,681,032	6,977,024
1890.....	102,216	92,405	1903.....	719,993	1,225,247	1916.....	5,369,560	6,547,728
1891.....	93,479	108,561	1904.....	967,172	1,338,239	1917.....	4,768,488	7,724,246
1892.....	117,408	147,663	1905.....	1,360,732	1,924,014	1918.....	3,591,481	7,076,503
1893.....	158,597	194,015	1906.....	2,128,374	3,170,859	1919.....	4,995,257	9,802,433
1894.....	108,142	144,637	1907.....	2,441,868	3,781,371	1920.....	6,651,980	14,798,070
1895.....	128,294	173,675	1908.....	2,666,333	3,709,954	1921.....	5,752,885	14,195,143
1896.....	149,090	201,651	1909.....	4,067,709	5,345,802	1922.....	6,943,972	15,438,481
1897.....	205,213	275,273	1910.....	4,753,975	6,412,215	1923.....	7,543,589	15,064,661
1898.....	250,209	397,580	1911.....	5,692,915	7,644,937	1924.....	7,498,624	13,398,411
1899.....	396,753	633,291	1912.....	7,132,732	9,106,556			
						<b>Total.....</b>	<b>110,970,813</b>	<b>179,895,769</b>

## PRODUCTION OF CEMENT IN CANADA 1887-1922

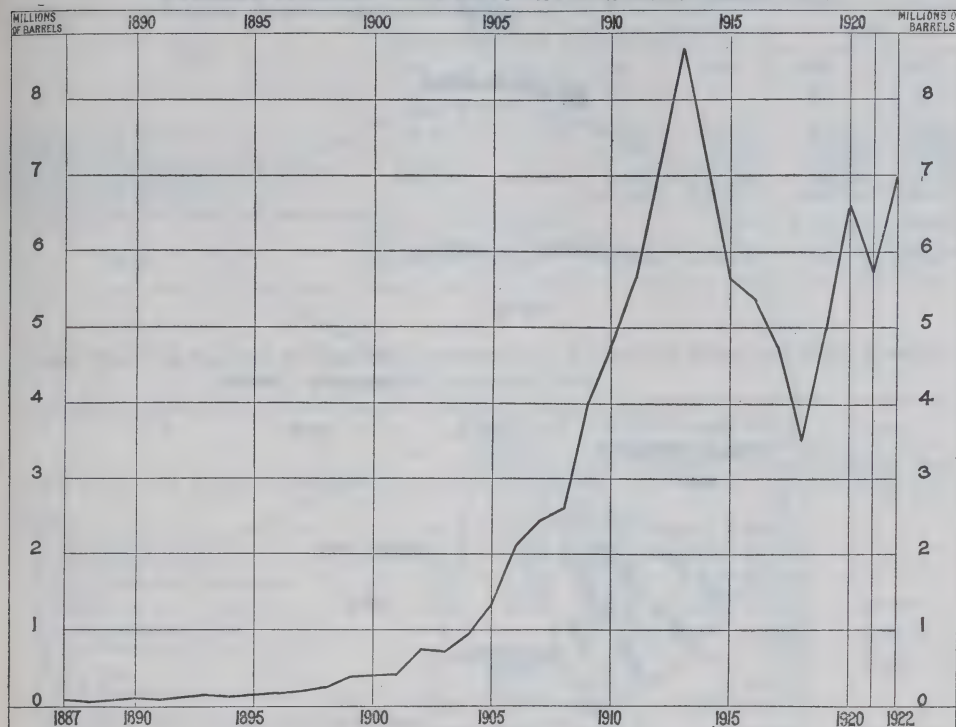
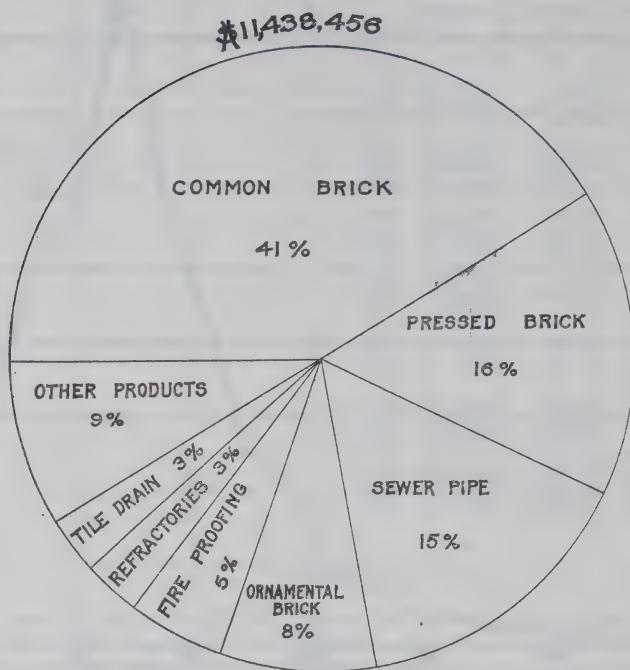


Table 181.—Summary Statistics of Cement in Canada, 1922, 1923 and 1924

	1922		1923		1924	
	Barrels	Value	Barrels	Value	Barrels	Value
		\$		\$		\$
Made from marl.....						
Made from limestone.....	6,447,696		7,688,196		7,768,652	
<b>Total made.....</b>	<b>6,447,696</b>		<b>7,688,196</b>		<b>7,768,652</b>	
Sold or used.....	6,943,972	15,438,481	7,543,589	15,064,661	7,498,624	13,398,411
Stocks Dec. 31.....	1,106,939		1,251,546		1,521,574	
<b>IMPORTS—</b>						
Portland cement.....	30,914	83,037	17,697	75,294	27,672	69,320
Manufactures.....		13,273		86,974		9,772
<b>EXPORTS.....</b>	<b>425,137</b>	<b>699,738</b>	<b>493,751</b>	<b>824,811</b>	<b>153,520</b>	<b>213,845</b>
<b>CONSUMPTION.....</b>	<b>6,549,749</b>		<b>7,067,535</b>		<b>7,372,776</b>	

# PRODUCTION IN CANADA OF CLAY PRODUCTS 1922



## CLAY AND CLAY PRODUCTS

Under "clay and clay products" there have been included statistics relating to production in Canada from domestic clays, of (a) fireclay, (b) fireclay blocks and shapes, (c) fire brick, (d) brick made by the different processes such as the soft mud process, stiff mud process and dry press, (e) structural tile, such as hollow blocks, roofing tile, floor tile (quarries), ceramic or glazed floor and wall tile, (f) drain tile, (g) sewer pipe, including copings, flue linings, etc., and (h) pottery.

In 1924, the co-operation of the Canadian National Clay Products Association was obtained in order to draw up a schedule that would present statistics in the most valuable form to the producer. The schedule drafted at this conference has proved to be most applicable to the industry.

For statistics on production in Canada from imported clay, see Table 183.

The total value of products from domestic clays, sold in Canada during 1924, was \$9,215,077 as compared with \$10,483,016 in 1923 and \$11,438,456 in 1922.

**Table 182.—Production of Clay Products in Canada, from Domestic Clays, by Provinces, 1922, 1923 and 1924**

Province	1922		1923		1924	
	Sold or used	Per cent of total value	Sold or used	Per cent of total value	Sold or used	Per cent of total value
	\$		\$		\$	
Prince Edward Island.....	3,975	0.03	413,974	3.95	3,340	0.04
Nova Scotia.....	427,643	3.74	62,587	0.60	355,948	3.86
New Brunswick.....	75,425	0.66	2,439,598	23.28	74,994	0.81
Quebec.....	2,494,236	21.81	6,270,615	59.82	2,435,695	26.44
Ontario.....	6,944,218	60.71	160,134	1.53	5,089,299	55.24
Manitoba.....	210,740	1.84	119,405	1.13	117,450	1.27
Saskatchewan.....	134,704	1.18	590,565	5.63	137,280	1.49
Alberta.....	700,063	6.12	428,138	4.06	540,477	5.86
British Columbia.....	447,452	3.91			460,594	4.99
<b>Canada.....</b>	<b>11,438,456</b>	<b>100.00</b>	<b>10,483,016</b>	<b>100.00</b>	<b>9,215,077</b>	<b>100.00</b>

Table 183.—Value of Clay Products Produced in Canada from Domestic and Imported Clays, 1923 and 1924

Item	From domestic clays		From imported clays		Total	
	1923	1924	1923	1924	1923	1924
	\$	\$	\$	\$	\$	\$
Fireclay blocks and shapes.....	81,345	51,273	271,227	146,016	352,572	197,289
Sanitary ware.....			417,454	254,752	417,454	254,752
Ceramic or glazed floor and wall tile.....	120,652			91,759	120,652	91,759
Pottery, glazed and unglazed.....	229,547	238,342	78,453	53,678	308,000	292,020
Electrical porcelain insulators.....			1,310,899	1,332,679	1,310,899	1,332,679
Other clay products (brick, tile, sewer-pipe, etc.).....	10,051,472	8,925,462		885	10,051,472	8,926,347
<b>Total.....</b>	<b>10,483,016</b>	<b>9,215,077</b>	<b>2,078,033</b>	<b>1,879,769</b>	<b>12,561,049</b>	<b>11,094,846</b>

Table 184.—Production in Canada, Imports and Exports of Clay and Clay Products, 1922, 1923 and 1924

		1922		1923		1924	
		Quantity	Value	Quantity	Value	Quantity	Value
			\$		\$		\$
<b>SALES—</b>							
Bricks, common.....	M	294,919	4,714,658	250,565	3,884,474		
Bricks, pressed.....	M	90,578	1,839,549	73,400	1,461,483		
Bricks, hollow building.....	M	4,892	448,674	7,720	620,329		
Bricks, moulded and ornamental.....	M	41,852	865,664	64,682	1,355,360		
Fire brick.....	M	6,705	251,776	6,122	295,037		
Fire clay.....	Tons.	10,196	55,185	2,685	24,158		
Fire clay blocks and shapes.....			67,588		81,345		
Fireproofing and hollow porous blocks.....			542,611		379,805		
Kaolin.....	Tons.	1,197	17,866	163	2,369		
Paving brick.....	M	151	5,972				
Pottery from domestic clay.....			266,391		229,547		
Sewer pipe.....	Tons.	75,932	1,766,347	70,252	1,616,324		
Architectural terra-cotta and tile other than drain.....			188,789		209,471		
Tile, drain.....	M	14,731	407,386	10,599	323,314		
<b>Total.....</b>			<b>11,438,456</b>		<b>10,483,016</b>		<b>9,215,077</b>
<b>IMPORTS—</b>							
Bath brick.....			1,043		1,938		1,799
Building brick.....	M	7,468	174,321	5,381	140,441	5,425	124,983
Building blocks.....			79,689		77,972		63,559
<b>Clays—</b>							
China.....	Cwt.	257,953	173,988	342,408	242,860	390,613	250,113
Fire.....	"	615,840	138,995	1,070,122	223,628	886,091	186,666
Pipe.....			2,884		1,161		847
Other clays.....			65,422		99,515		56,500
Drain tile, unglazed.....			602		2,041		3,014
Drain and sewer pipe.....			61,397		61,868		68,449
Earthenware and chinaware.....			4,641,474		5,067,489		4,124,607
Brick, fire, other, valued at not less than \$100 per M, rectangular shaped; the dimensions of each not to exceed 125 cubic inches for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment—(From May 12, 1923).)			611,564		970,324		23,413
Firebrick, n.o.p.....			361,338		610,243		812,039
Firebrick, chrome—(From May 12, 1923).....					4,000		284,388
Magnesite brick.....			56,561		120,453		91,553
Silica brick.....			131,517		216,642		154,251
Paving brick.....	M	1,766	45,686	3,243	90,767	2,559	69,493
Other clay manufactures.....			117,952		241,820		842,577
<b>Total.....</b>			<b>6,664,503</b>		<b>8,172,662</b>		<b>7,158,371</b>
<b>EXPORTS—</b>							
Building brick.....	M	2,418	31,383	4,069	42,742	2,988	38,105
<b>Clay—</b>							
Unmanufactured.....	Cwt.	2,589	1,777	12	52	1,346	1,127
Manufactures.....			104,933		109,957		109,295
Earthenware.....			172,955		432,092		72,839
Porcelain insulators.....							322,206
<b>Total.....</b>			<b>311,048</b>		<b>584,843</b>		<b>543,572</b>

\*Prior to April 1924, porcelain insulators included with earthenware.

Table 185—Production of Clay Products in Canada, from Domestic Clays, 1924.

Kind	Quantity	Total selling value
		\$
Brick: Soft mud process (Face..... M	10,831	185,248
Common..... " "	50,079	746,044
Stiff mud process (Face..... " "	80,565	1,842,224
(wire cut) Common..... " "	124,556	1,880,631
Dry press (Face..... " "	35,203	761,572
Common..... " "	12,794	168,043
Fancy or ornamental brick (including special shapes, embossed and enamelled brick) " "	755	98,460
Sewer brick..... " "	2,690	40,775
Firebrick from domestic clay..... " "	4,327	209,256
Fireclay..... Ton	8,645	26,258
Fireclay blocks and shapes.....		51,273
Structural tile: Hollow blocks (including fireproofing and load-bearing tile)..... Ton	96,818	926,777
Roofing tile..... No.	7,377	917
Floor tile (quarries)..... Sq. ft.	444,691	35,608
Drain tile..... M	15,137	409,369
Sewer pipe (including copings, flue linings, etc.)..... Ton	76,355	1,594,280
Pottery, glazed or unglazed.....		238,342
<b>Total</b> .....		<b>9,215,077</b>

**Brick.**—Ontario is the leading province in the manufacture of building brick in Canada. During 1924, Ontario's production was valued at \$3,279,291. Quebec came next with a total valued at \$1,844,680. Alberta, British Columbia, Manitoba, Nova Scotia, Saskatchewan, New Brunswick and Prince Edward Island followed in the order named. The total Canadian production in 1924 had a selling value of \$5,722,997 as against \$6,701,317 in 1923.

In the city of Medicine Hat, Alberta, a large brick company uses natural gas from its own wells for brick burning. Distributing pipes from the wells are led to the kilns. Maintenance of the temperature desired, is easily accomplished by the regulation of the gas flow.

Table 186.—Production of Building Brick in Canada by Provinces, 1923 and 1924

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
<b>1923</b>									
Common brick..... M	6,079	2,142	98,795	117,390	8,961	2,997	8,023	6,178	250,565
Pressed brick..... M	71,072	34,663	1,421,376	2,008,614	142,896	35,032	89,029	81,792	3,884,474
Moulded and ornamental brick..... M	—	—	4,319	57,642	—	1,091	8,925	1,423	73,400
..... M	—	—	118,705	1,142,988	—	33,291	109,066	57,433	1,461,483
..... M	400	—	13,505	49,682	—	133	554	408	64,682
..... \$	6,000	—	341,337	975,608	—	4,988	11,093	16,334	1,355,360
<b>Total</b> ..... M	<b>6,479</b>	<b>2,142</b>	<b>116,619</b>	<b>224,714</b>	<b>8,961</b>	<b>4,221</b>	<b>17,592</b>	<b>8,009</b>	<b>388,647</b>
..... \$	<b>77,072</b>	<b>34,663</b>	<b>1,881,418</b>	<b>4,127,210</b>	<b>142,896</b>	<b>73,311</b>	<b>209,188</b>	<b>155,559</b>	<b>6,701,317</b>
<b>1924</b>									
Soft mud process (Face..... M	—	—	—	10,605	—	226	—	—	10,831
Common..... M	—	—	—	182,385	—	2,863	—	—	185,248
Stiff mud process (Face..... M	440	2,345	4,802	31,011	5,722	1,603	1,446	2,565	50,079
(wire cut) Common..... M	5,880	38,131	48,865	488,742	93,698	20,473	19,195	29,470	746,044
Dry press (Face..... M	675	—	14,611	63,353	165	1,200	213	348	80,565
Common..... M	13,581	—	381,549	1,385,131	4,911	32,210	5,736	19,106	1,842,224
..... M	4,161	—	93,343	22,533	127	227	3,502	633	124,556
..... M	59,322	—	1,351,657	424,536	1,270	3,570	38,823	10,453	1,880,631
..... M	—	—	1,817	30,597	—	173	1,486	1,130	35,203
Dry press (Common..... M	—	—	53,006	636,101	—	6,064	25,824	40,577	761,572
..... M	—	—	—	2,433	—	128	7,510	2,723	12,794
..... M	—	—	—	34,093	—	2,018	96,533	35,399	168,043
Fancy or ornamental brick..... M	—	—	223	532	—	—	—	—	755
..... M	—	—	9,603	88,857	—	—	—	—	98,460
Sewer brick..... M	—	—	—	2,656	—	—	—	34	2,690
..... M	—	—	—	39,446	—	—	—	1,329	40,775
<b>Total</b> ..... M	<b>5,276</b>	<b>2,345</b>	<b>114,796</b>	<b>163,780</b>	<b>6,014</b>	<b>3,557</b>	<b>14,157</b>	<b>7,433</b>	<b>317,473</b>
..... \$	<b>69,783</b>	<b>38,131</b>	<b>1,844,680</b>	<b>3,279,291</b>	<b>99,879</b>	<b>67,198</b>	<b>186,111</b>	<b>136,334</b>	<b>5,722,997</b>

\*Totals for Canada include record of small production in Prince Edward Island.

**Table 187.—Production of Building Brick (Common and Pressed), 1886-1906**

Year	Value	Year	Value	Year	Quantity	Value
	\$		\$		M	\$
1886.....	873,600	1893.....	1,800,000	1900.....		2,275,000
1887.....	986,689	1894.....	1,800,000	1901.....		2,400,000
1888.....	1,036,746	1895.....	1,670,000	1902.....		2,593,000
1889.....	1,273,884	1896.....	1,600,000	1903.....		2,832,000
1890.....	1,266,982	1897.....	1,600,000	1904.....		2,983,000
1891.....	1,061,536	1898.....	1,900,000	1905.....	523,820	3,933,925
1892.....	1,251,934	1899.....	2,195,000	1906.....	523,390	4,102,590
				<b>Total.....</b>		<b>41,435,886</b>

**Table 188.—Production of Common Brick, 1907-1923**

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M.	\$		M.	\$		M.	\$
1907.....	439,016	3,455,524	1914.....	457,514	3,653,861	1920.....	303,343	4,835,996
1908.....	353,261	2,611,554	1915.....	234,733	1,755,187	1921.....	220,438	3,567,503
1909.....	539,229	4,212,424	1916.....	237,035	1,826,844	1922.....	294,919	4,714,658
1910.....	627,715	5,105,354	1917.....	210,631	1,999,465	1923.....	250,565	3,884,474
1911.....	645,551	5,420,890	1918.....	164,970	1,879,811			
1912.....	769,192	7,010,375	1919.....	291,470	3,850,219	<b>Total.....</b>	<b>6,708,009</b>	<b>65,701,512</b>
1913.....	668,427	5,917,373						

**Table 189.—Production of Pressed Brick, 1907-1923**

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M.	\$		M.	\$		M.	\$
1907.....	73,922	794,722	1914.....	93,635	1,115,556	1920.....	85,137	2,004,537
1908.....	53,481	517,180	1915.....	49,817	492,774	1921.....	80,947	1,733,293
1909.....	57,265	630,677	1916.....	44,947	492,355	1922.....	90,578	1,839,549
1910.....	67,895	807,294	1917.....	46,409	653,153	1923.....	73,400	1,461,483
1911.....	87,351	1,094,582	1918.....	40,147	639,083			
1912.....	126,180	1,609,854	1919.....	74,424	1,304,162	<b>Total.....</b>	<b>1,266,337</b>	<b>18,653,987</b>
1913.....	116,802	1,458,733						

**Table 190.—Production of Paving Brick\*, 1897-1924**

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$		M	\$
1897.....	4,568	45,670	1905.....	4,500	54,000	1914.....	2,707	49,627
1898.....			1906.....	3,000	45,000	1915.....	1,228	20,694
1899.....	5,300	42,550	1907.....	3,618	72,354	1916.....	1,590	30,144
1900.....	2,710	26,950	1908.....	3,720	59,456	1917-1921.....		
1901.....	3,689	37,000	1909.....	3,760	67,408	1922.....	151	5,972
1902.....	4,211	42,000	1910.....	4,215	78,980	1923-1924.....		
1903.....	3,789	45,288	1911.....	5,220	79,444			
1904.....	4,436	55,450	1912.....	4,530	85,989	<b>Total.....</b>	<b>71,206</b>	<b>1,019,645</b>
			1913.....	4,208	75,669			

\*Figures prior to 1907 compiled by the Ontario Bureau of Mines.

**Structural Tile.**—Records of the production of structural tile in Canada include such items as hollow blocks (fire-proofing and load-bearing tile), roofing tile, and floor tile; sales of these products amounted in value to \$963,302 in 1924. Hollow blocks are manufactured in every province except New Brunswick, and Prince Edward Island. Roofing tile is made in Ontario only. Floor tile is made in Ontario and also in small quantities in British Columbia.

**Table 191.—Production of Hollow Building Blocks, Fireproofing, Architectural Terra-cotta and Tile other than Drain, in Canada, by Provinces, 1922 and 1923**

Province	Hollow building bricks or blocks				Fireproofing and hollow porous blocks		Architectural terra-cotta and tile other than drain	
	1922		1923		1922	1923	1922	1923
	Quantity	Value	Quantity	Value	Value	Value	Value	Value
	M	\$	M	\$	\$	\$	\$	\$
Nova Scotia.....	.....	.....	294	26,074	3,654	.....	.....	.....
Quebec.....	515	41,784	1,929	156,112	160,471	66,868	19,278	28,082
Ontario.....	2,017	272,118	4,168	309,605	274,618	284,039	169,297	181,376
Manitoba.....	860	15,310	137	15,478	27,639	.....	.....	.....
Saskatchewan.....	495	37,550	215	19,650	.....	.....	.....	.....
Alberta.....	707	40,050	400	41,657	76,229	29,898	.....	.....
British Columbia.....	298	41,862	577	51,753	.....	.....	214	13
<b>Canada.....</b>	<b>4,892</b>	<b>448,674</b>	<b>7,720</b>	<b>620,329</b>	<b>542,611</b>	<b>379,805</b>	<b>188,789</b>	<b>209,471</b>

**Table 192.—Production of Structural Tile in Canada by Provinces, 1924**

Province	Hollow blocks (including fireproofing and load-bearing tile)		Roofing tile		Floor tile (quarries)	
	Tons	Value	No.	Value	Sq. ft.	Value
		\$		\$		\$
Nova Scotia.....	4,695	54,410	.....	.....	.....	.....
Quebec.....	29,366	277,940	.....	.....	.....	.....
Ontario.....	48,134	428,894	7,377	917	441,301	35,211
Manitoba.....	969	11,726	.....	.....	.....	.....
Saskatchewan.....	1,795	35,892	.....	.....	.....	.....
Alberta.....	5,511	51,518	.....	.....	.....	.....
British Columbia.....	6,348	66,397	.....	.....	3,300	397
<b>Canada.....</b>	<b>96,818</b>	<b>926,777</b>	<b>7,377</b>	<b>917</b>	<b>444,601</b>	<b>35,608</b>

**Drain Tile and Sewer pipe.**—The production of sewer pipe in Canada during 1924 amounted to 76,355 tons valued at \$1,594,280 as against 70,252 tons valued at \$1,616,324 in 1923. During the year under review, sales of drain tile made in Canada reached a total value of \$409,369 as against \$323,314 for the year 1923, an increase of \$86,055. Of the total production of drain tile and sewer pipe in Canada, Ontario accounted for more than 50 per cent.

**Table 193.—Production of Sewer Pipe in Canada, 1888-1924**

Year	Value	Year	Value	Year	Tons	Value
	\$		\$			\$
1888.....	266,320	1901.....	248,115	1914.....	.....	1,104,499
1889.....	.....	1902.....	301,965	1915.....	.....	799,446
1890.....	348,000	1903.....	317,970	1916.....	.....	716,287
1891.....	227,300	1904.....	440,894	1917.....	.....	783,762
1892.....	367,660	1905.....	382,000	1918.....	36,574	699,774
1893.....	350,000	1906.....	530,045	1919.....	62,821	1,074,146
1894.....	250,325	1907.....	667,100	1920.....	58,887	1,549,090
1895.....	257,045	1908.....	514,362	1921.....	.....	1,666,584
1896.....	153,875	1909.....	645,722	1922.....	75,932	1,766,347
1897.....	164,250	1910.....	774,110	1923.....	70,252	1,616,324
1898.....	181,717	1911.....	812,716	1924.....	76,355	1,594,280
1899.....	161,546	1912.....	884,641			
1900.....	231,525	1913.....	1,035,906	<b>Total.....</b>		<b>23,885,648</b>

\*Data not available.

Table 194.—Production of Drain Tile in Canada, 1891-1924

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
*1891.....	90,000	1900.....	225,000	1909.....	408,440	1917.....	434,708
1892.....	100,000	1901.....	250,000	1910.....	370,008	1918.....	490,340
1893.....	190,000	1902.....	250,000	1911.....	339,812	1919.....	616,510
*1894.....	280,000	1903.....	275,000	1912.....	357,862	1920.....	562,652
1895.....	210,000	1904.....	260,000	1913.....	338,552	1921.....	473,952
1896.....	225,000	1905.....	260,000	1914.....	366,340	1922.....	407,386
1897.....	225,000	1906.....	290,000	1915.....	355,296	1923.....	323,314
1898.....	225,000	1907.....	260,609	1916.....	359,387	1924.....	409,369
1899.....	225,000	1908.....	298,561			<b>Total.....</b>	<b>10,762,095</b>

\*1891-1894 (inclusive), as reported by Ontario Bureau of Mines.

Table 195.—Production of Drain Tile and Sewer Pipe, in Canada, by Provinces, 1923 and 1924

Province	1923				1924			
	Drain Tile		Sewer Pipe		Drain Tile		Sewer Pipe	
	M	\$	Tons	\$	M	\$	Tons	\$
Prince Edward Island.....					76	1,750		
Nova Scotia.....	62	2,423	10,733	200,707	71	2,515	12,910	214,783
Quebec.....	170	10,312	12,268	294,437	65	2,550	12,939	310,525
Ontario.....	9,661	283,662	40,562	925,858	14,096	373,979	42,449	848,393
Manitoba.....	30	1,760			167	5,845		
Saskatchewan.....	65	4,550			200	8,000		
Alberta.....	103	5,414	6,035	175,168	38	1,831	6,345	168,016
British Columbia.....	508	15,193	654	20,154	424	12,899	1,712	52,558
<b>Canada.....</b>	<b>10,599</b>	<b>323,314</b>	<b>70,252</b>	<b>1,616,324</b>	<b>15,137</b>	<b>409,369</b>	<b>76,355</b>	<b>1,594,280</b>

**Sanitary Ware and Pottery from Domestic Clays.**—Pottery from domestic clays sold during 1924 amounted in value to \$238,342 as against \$229,547 in the preceding year. Pottery produced from imported clays was valued at \$53,678, as given in Table 183, making this total production worth \$292,020. While no sanitary ware was produced in Canada from domestic clays during 1924, the production of this commodity from imported clays was valued at \$254,752.

In computing the value of the mineral production of Canada, only the sales of pottery made from domestic clays are included; the value of pottery made from imported clays is included in the record of manufactures, on which a special Bureau report is issued.

Table 196.—Production of Pottery from Domestic Clays in Canada, 1888-1924

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
1888.....	27,750	1898.....	214,675	1908.....	200,541	1917.....	122,878
1889.....	*	1899.....	185,000	1909.....	285,285	1918.....	130,242
1890.....	195,242	1900.....	200,000	1910.....	250,924	1919.....	185,474
1891.....	258,844	1901.....	200,000	1911.....	102,493	1920.....	209,171
1892.....	265,811	1902.....	200,000	1912.....	43,955	1921.....	231,262
1893.....	213,186	1903.....	200,000	1913.....	53,533	1922.....	266,391
1894.....	162,144	1904.....	140,000	1914.....	35,371	1923.....	229,547
1895.....	151,588	1905.....	120,000	1915.....	64,900	1924.....	238,342
1896.....	163,427	1906.....	150,000	1916.....	61,069		
1897.....	129,629	1907.....	253,809			<b>Total.....</b>	<b>6,142,483</b>

\*Not available.

**Kaolin.**—Up to the present date, the only deposit of kaolin which has been developed in Canada, is located at St. Rémi d'Amherst, near Huberdeau, Quebec. This deposit was operated during the first part of 1923, and shipments were made, amounting in all to 163 tons of white clay. In 1922, shipments were considerably higher amounting to 1,197 tons. There was no production of kaolin in 1924.

Table 197.—Production of Kaolin in Canada, 1912-1924

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1912.....	20	160	1917.....	533	9,594	1922.....	1,197	17,866
1913.....	500	5,000	1918.....	863	19,299	1923.....	163	2,369
1914.....	1,000	10,000	1919.....	759	13,744	1924.....		
1915.....	1,300	13,000	1920.....	683	15,022			
1916.....	1,750	17,500	1921.....	124	1,888	<b>Total.....</b>	<b>8,892</b>	<b>125,442</b>

**Refractories.**—*Fireclay.*—Sales of fire clay or refractory clay sold as such, in Canada, during 1924, were valued at \$26,258. Shipments of this commodity were made from deposits in the provinces of British Columbia, Saskatchewan, New Brunswick and Nova Scotia during the year.

*Firebrick.*—Firebrick produced from domestic clays totalled 4,327 thousand valued at \$209,256, as against 6,122 thousand valued at \$295,037 in the previous year. British Columbia was the principal producer accounting for 68 per cent of the total sales of this commodity in the whole of Canada.

Imports of firebrick into Canada during 1924, consisting of magnesite brick, silica brick, firebrick of a kind not made in Canada, and firebrick n.o.p., were appraised at \$1,365,644.

Large deposits of magnesite from which a good grade of basic high temperature brick may be made, occur in the province of Quebec.

Table 198.—Production of Fire Clay in Canada, 1889-1924

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	Tons	\$		Tons	\$		Tons	\$
1889.....	400	4,800	1902.....	2,741	4,283	1915.....	2,328	12,065
1890.....			1903.....	2,639	3,523	1916.....	9,206	30,767
1891.....	250	750	1904.....	5,972	17,466	1917.....	10,534	49,455
1892.....	1,991	4,467	1905.....	5,088	13,917	1918.....	8,732	44,351
1893.....	540	700	1906.....	6,559	18,522	1919.....	4,600	24,163
1894.....	539	2,167	1907.....			1920.....	8,321	44,091
1895.....	1,329	3,492	1908.....	1,984	8,121	1921.....	2,931	29,851
1896.....	842	1,805	1909.....	4,405	12,390	1922.....	10,196	55,185
1897.....	2,118	5,759	1910.....	1,425	5,863	1923.....	2,685	24,158
1898.....	670	1,680	1911.....	7,532	24,128	1924.....	3,645	26,258
1899.....	599	1,295	1912.....	6,307	24,343			
1900.....	1,245	4,130	1913.....	3,345	14,018	<b>Total.....</b>	<b>127,848</b>	<b>536,758</b>
1901.....	3,979	5,920	1914.....	2,171	12,875			

Table 199.—Production of Fire Brick and Other Fire-Clay Products in Canada, from Domestic Clays, 1907-1924

Year	Fire brick		Other fireclay products	Year	Fire brick		Other fireclay products
	Quantity	Value	Value		Quantity	Value	Value
	M	\$	\$		M	\$	\$
1907.....	4,323	113,322	18,000	1917.....	8,192	199,171	77,885
1908.....	2,416	70,429	31,752	1918.....	7,192	248,884	111,589
1909.....	1,059	32,742	33,000	1919.....	5,610	268,756	96,435
1910.....	1,375	29,352	15,000	1920.....	7,293	375,230	54,792
1911.....	2,368	44,122	20,880	1921.....	4,502	242,462	91,685
1912.....	3,430	67,192	34,050	1922.....	6,705	251,776	67,588
1913.....	3,667	86,164	42,556	1923.....	6,122	295,037	81,345
1914.....	2,816	72,299	22,394	1924.....	4,327	209,256	51,273
1915.....	2,896	68,700	29,928				
1916.....	5,689	147,757	56,038	<b>Total.....</b>	<b>79,982</b>	<b>2,822,651</b>	<b>936,190</b>

Table 200.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1923

Province	Fire clay		Fire brick			Fire clay blocks and shapes
	Sold or used		Manu- factured	Sold or used		Sold or used
	Quantity	Value		Quantity	Value	
	Tons	\$		M	\$	\$
Nova Scotia.....	1,189	5,448	2,260	1,811	100,700	1,550
New Brunswick.....			16	19	1,377	
Ontario.....	98	1,475	803	892	44,772	34,618
Saskatchewan.....	324	2,729	525	450	17,985	1,180
Alberta.....			50	65	1,630	3,610
British Columbia.....	1,074	14,506	3,553	2,885	128,573	40,887
<b>Canada.....</b>	<b>2,685</b>	<b>24,158</b>	<b>7,207</b>	<b>6,122</b>	<b>295,037</b>	<b>81,345</b>

Table 201.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1924

Province	Fire clay		Fire brick		Fire clay blocks and shapes
	Sold or used		Sold or used		Sold or used
	Quantity	Value	Quantity	Value	
	Tons	\$	M	\$	
Nova Scotia.....	1,967	5,258	176	8,269	930
New Brunswick.....	50	2,005	23	640	
Ontario.....			718	38,509	
Saskatchewan.....	315	2,436	436	19,936	3,818
Alberta.....					12,977
British Columbia.....	1,313	16,559	2,974	141,902	33,548
<b>Canada.....</b>	<b>3,645</b>	<b>26,258</b>	<b>4,327</b>	<b>209,256</b>	<b>51,273</b>

## LIME.

During 1924 the production of lime in Canada amounted to 9,136,952 bushels valued at \$3,178,541 as against 10,035,319 bushels valued at \$3,266,608 in 1923. The average price obtained for quicklime during the year was 33.6 cents per bushel and hydrated lime sold for \$11.92 per ton.

Importations of lime were recorded at 4,418 tons appraised at \$46,578 and exports amounted to 22,750 tons worth \$411,122

Quicklime finds its most extensive use in Canada as a material in the chemical industry, the pulp and paper industry, and in the building trades. Hydrated lime markets include building trades and dealers mostly; there are a few other outlets for the production,—chemical plants, agricultural purposes, metallurgical works, etc.

Ontario is the chief Canadian source of lime; this province produced 5,419,307 bushels of lime in 1924 having a selling value at the kiln of \$1,840,152. Each of the other provinces, however, (except Prince Edward Island and Saskatchewan) produces this valuable building material.

Table 202.—Production of Lime in Canada, 1886-1924

Year	Value	Year	Bushels	Value	Year	Bushels	Value
	\$			\$			\$
1886.....	283,755	1900 (Estimated)		800,000	1914.....	7,028,582	1,360,628
1887.....	394,859	1901 .....		830,000	1915.....	5,047,244	1,015,702
1888.....	339,951	1902 .....		892,000	1916.....	5,493,250	1,091,463
1889.....	362,848	1903 .....		900,000	1917.....	6,567,170	1,558,487
1890.....	412,308	1904 .....		780,000	1918.....	6,363,951	1,876,025
1891.....	251,215	1905 .....		750,000	1919.....	7,147,504	2,310,607
1892.....	411,270	1906.....	5,230,406	1,009,177	1920.....	9,427,334	3,818,553
1893 (Estimated)...	900,000	1907.....	4,755,316	974,595	1921.....	6,879,066	2,781,197
1894.....	900,000	1908.....	3,601,468	712,947	1922.....	8,972,971	3,165,005
1895.....	700,000	1909.....	5,592,924	1,132,756	1923.....	10,035,319	3,266,608
1896.....	650,000	1910.....	5,848,146	1,137,079	1924.....	9,136,952	3,178,541
1897.....	650,000	1911.....	7,533,525	1,517,599			
1898 (Estimated)...	650,000	1912.....	8,475,839	1,844,849	<b>Total.....</b>		<b>48,019,422</b>
1899 .....	800,000	1913.....	7,558,484	1,609,398			

Table 203.—Production of Lime in Canada, 1923 and 1924, showing Purpose for which Sold or Used

Purpose for which sold or used	1923				1924			
	Quicklime		Hydrated lime		Quicklime		Hydrated lime	
	Bushels	Value*	Tons	Value*	Bushels	Value*	Tons	Value*
		\$		\$		\$		\$
Building trades.....	1,538,188	530,342	27,110	340,746	1,056,281	430,624	22,772	284,327
Chemical works.....	2,513,848	697,233	1,838	13,108	2,653,362	843,111	1,953	13,835
Glass works.....	75,716	22,206	300	3,362	94,602	26,567	25	287
Smelters.....	242,366	80,787			56,518	35,689		
Pulp and paper mills.....	1,993,101	496,306	2,945	27,672	1,896,907	466,189	3,535	33,915
Sugar refineries.....	446,970	76,100			315,323	94,383		
Tanneries.....	52,544	20,749	25	250	63,141	21,411	111	1,166
Agricultural uses (fertilizers).....	36,557	3,794	1,063	9,501			399	3,374
Dealers (uses unspecified).....	1,130,676	530,624	18,371	230,785	743,816	287,362	13,073	160,937
Other consumers.....	526,353	180,748	143	2,295	940,259	424,002	4,218	51,362
<b>Total sold or used.....</b>	<b>8,556,319</b>	<b>2,638,889</b>	<b>51,765</b>	<b>627,719</b>	<b>7,826,209</b>	<b>2,629,338</b>	<b>46,086</b>	<b>549,203</b>

\*Total selling value at kiln.

Table 204.—Production of Lime in Canada, by Provinces, 1922, 1923 and 1924

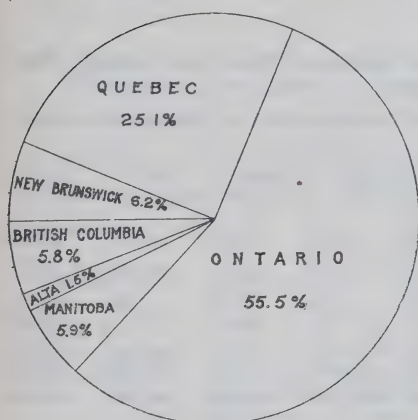
Province		Quicklime		Hydrated Lime		Total	
		Sold or used		Sold or used		Sold or used	
		Bushels	Selling value at kiln	Bushels	Selling value at kiln	Bushels	Selling value at kiln
			\$		\$		\$
Nova Scotia.....	1922.....						
	1923.....	42,370	7,199			42,370	7,199
	1924.....			2,229	936	2,229	936
New Brunswick.....	1922.....	560,834	187,895			560,834	187,895
	1923.....	329,548	143,814			329,548	143,814
	1924.....	208,180	108,890			208,180	108,890
Quebec.....	1922.....	2,108,513	634,157	150,800	55,642	2,259,313	689,799
	1923.....	2,198,071	576,731	159,857	57,482	2,357,928	634,213
	1924.....	2,219,359	610,990	167,086	58,947	2,386,445	699,937
Ontario.....	1922.....	3,939,954	1,311,563	1,040,229	455,980	4,980,183	1,767,543
	1923.....	4,810,421	1,373,823	1,192,200	519,840	6,002,621	1,893,663
	1924.....	4,391,050	1,401,545	1,028,257	438,607	5,419,307	1,840,152
Manitoba.....	1922.....	525,184	163,799			525,184	163,799
	1923.....	524,128	161,226			524,128	161,226
	1924.....	394,229	121,518			394,229	121,518
Alberta.....	1922.....	129,827	70,992	800	336	130,627	71,328
	1923.....	86,810	37,653	943	346	87,753	37,999
	1924.....	89,814	36,083	400	196	90,214	36,279
British Columbia.....	1922.....	433,716	254,320	83,114	30,321	516,830	284,641
	1923.....	564,971	338,443	126,000	50,051	690,971	388,494
	1924.....	517,577	320,312	118,771	50,517	636,348	370,829
<b>Canada.....</b>	<b>1922.....</b>	<b>7,698,028</b>	<b>2,622,726</b>	<b>1,274,943</b>	<b>542,279</b>	<b>8,972,971</b>	<b>3,165,005</b>
	<b>1923.....</b>	<b>8,556,319</b>	<b>2,638,889</b>	<b>1,479,000</b>	<b>627,719</b>	<b>10,035,319</b>	<b>3,266,608</b>
	<b>1924.....</b>	<b>7,826,209</b>	<b>2,629,338</b>	<b>1,316,743</b>	<b>549,203</b>	<b>9,136,952</b>	<b>3,178,541</b>

Table 205.—Imports into Canada and Exports of Lime, 1922, 1923 and 1924

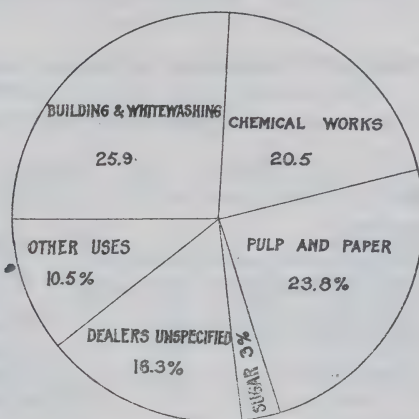
Item	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Imports.....	2,555	27,942	4,989	55,820	4,418	46,578
Exports.....	14,330	270,724	24,326	428,286	22,750	411,122

## PRODUCTION OF LIME IN CANADA 1922

## BY PROVINCES



## BY USES



## SAND AND GRAVEL

The production of sand and gravel in 1924 totalled 11,603,500 tons, valued at \$3,181,083 as against 12,752,515 tons valued at \$3,016,518 in 1923. This was a decrease in quantity of 1,149,015 tons and an increase in value of \$164,565.

Imports of sand and gravel into Canada during the year amounted to 150,868 tons a decrease of 204,258 tons from the total recorded for 1923. Importations of silica sand, for the manufacture of glass and carborundum, and for use in foundries totalled 131,778 tons or 21 per cent less than in the preceding year.

**Production by Railway Companies.**—As the sand and gravel produced by railway companies in Canada accounted for 46 per cent of the total production, statistics relating to this output have been tabulated separately from data regarding other producers. It will be noted in the table below that 95 per cent of this output was utilized as railway ballast. In addition to this quantity there was a production of 211,861 tons for use in road-building and construction industries; and less quantities for use as blast, core and engine sands.

**Production by Other Operators.**—Statistics given under this sub-heading include data concerning the production of sand and gravel by all operators in Canada other than railway companies. These producers numbered 558 operators distributed as follows: Nova Scotia, 11; New Brunswick, 4; Quebec, 60; Ontario, 460; Manitoba, 9; Saskatchewan, 7; Alberta, 3; and 4 in British Columbia.

Table 206.—Production of Sand and Gravel in Canada, 1895-1924\*

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	Tons	\$		Tons	\$		Tons	\$
1895.....	277,162	118,359	1906.....	336,550	139,712	1917.....	9,182,417	2,326,249
1896.....	224,769	80,110	1907.....	298,095	119,853	1918.....	11,262,282	2,367,018
1897.....	152,963	76,729	1908.....	298,954	161,387	1919.....	10,364,481	2,680,460
1898.....	165,954	90,498	1909.....	481,584	286,166	1920.....	11,530,795	4,201,067
1899.....	242,450	101,640	1910.....	624,824	407,974	1921.....	11,574,862	2,537,249
1900.....	197,558	101,666	1911.....	573,494	408,110	1922.....	11,666,374	3,502,935
1901.....	197,302	117,465	1912.....	.....	1,512,699	1923.....	12,752,515	3,016,518
1902.....	159,793	119,120	1913.....	.....	2,258,874	1924.....	11,603,500	3,181,083
1903.....	355,792	124,006	1914.....	.....	2,505,310			
1904.....	399,809	189,808	1915.....	.....	1,624,767	<b>Total.....</b>		<b>36,317,352</b>
1905.....	306,935	152,808	1916.....	8,156,207	1,838,320			

\*Exports prior to 1912. No production statistics collected.

Table 207.—Production in Canada, Imports and Exports of Sand and Gravel, 1922, 1923 and 1924

Kind	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Moulding sand.....	159,369	107,738	154,711	111,537	118,202	80,072
Building sand and sand for concrete road-work, etc.	1,464,112	963,037	1,740,573	706,250	2,662,809	911,173
Other sand (including blast, core and engine sands).....	165,352	49,916	101,695	72,980	46,515	22,346
Sand and gravel for railway ballast.....	6,099,560	1,066,716	6,149,789	800,496	5,076,511	696,966
Sand and gravel for concrete, road building, etc.....	3,591,515	1,198,156	4,115,260	1,050,504	3,086,663	1,203,259
Crushed gravel.....	186,466	117,372	490,487	274,751	612,800	267,267
<b>Total.....</b>	<b>11,666,374</b>	<b>3,502,935</b>	<b>12,752,515</b>	<b>3,016,518</b>	<b>11,603,500</b>	<b>3,181,083</b>
<b>IMPORTS—</b>						
Sand, silica for glass and carborundum manufacture, etc.....	107,873	224,473	167,556	317,250	131,778	324,279
Sand and gravel, n.o.p.....	350,992	175,667	355,126	247,388	150,868	118,397
<b>Total.....</b>	<b>458,865</b>	<b>400,140</b>	<b>522,682</b>	<b>564,638</b>	<b>282,646</b>	<b>442,676</b>
<b>EXPORTS.....</b>	<b>683,709</b>	<b>116,121</b>	<b>764,521</b>	<b>182,750</b>	<b>1,636,029</b>	<b>210,496</b>

Table 208.—Railway Production of Sand and Gravel in Canada, 1922, 1923 and 1924

Kind	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Moulding sand.....	1,500	300	2,738	405	4,779	708
Building sand and sand for concrete road-work.....	24,379	9,468	5,524	2,670	23,121	7,317
Other sand (including blast, core and engine sand).....	20,810	7,732	30,967	38,516	35,703	11,961
Sand and gravel for ballast.....	5,938,794	984,317	5,991,863	737,812	5,063,711	679,297
Sand and gravel for concrete, road-building, etc.....	751,137	128,223	1,409,304	148,535	188,740	39,886
Crushed gravel.....	635	846	270	500	.....	.....
<b>Total.....</b>	<b>6,737,255</b>	<b>1,130,886</b>	<b>7,440,666</b>	<b>928,438</b>	<b>5,316,654</b>	<b>739,169</b>

Table 209.—Production of Sand and Gravel by Other Operators in Canada, 1922, 1923 and 1924

Kind	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Moulding sand.....	157,869	107,438	151,973	111,132	113,423	79,364
Building sand and sand for concrete road-work, etc.....	1,439,733	953,569	1,735,049	703,580	2,639,688	903,856
Other sand (including blast, core and engine sands).....	144,542	42,184	70,728	34,464	10,812	10,385
Sand and gravel for railway ballast.....	160,766	82,399	157,926	62,684	12,800	17,669
Sand and gravel for concrete, road building, etc.....	2,840,378	1,069,933	2,705,956	901,969	2,897,923	1,163,373
Crushed gravel.....	185,831	116,526	490,217	274,251	612,800	267,267
<b>Total.....</b>	<b>4,929,119</b>	<b>2,372,049</b>	<b>5,311,849</b>	<b>2,088,080</b>	<b>6,287,446</b>	<b>2,441,914</b>

Table 210.—Production of Sand and Gravel in Canada, by Provinces, 1923

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total for Canada
Moulding sand.....Tons	30			153,652	1,029				154,711
\$	250			110,189	1,008				111,537
Building sand.....Tons	4,787		279,666	1,293,189	37,067	7,287	10,920	107,655	1,740,573
\$	3,490		100,158	513,527	19,035	5,398	7,523	57,119	706,250
Other sand.....Tons	9,476	1,005	10,680	42,415	409	3,652	10,720	23,337	101,695
\$	8,474	28,140	4,336	21,986	290	2,300	2,817	4,637	72,980
Sand and gravel—(a) for railway ballast..Tons	162,979	487,844	672,569	3,012,959	440,563	412,283	551,943	388,050	*6,149,789
\$	22,131	49,630	77,390	370,876	51,705	45,606	122,008	56,721	*809,496
(b) for concrete, etc....Tons	25,874	119,679	92,902	3,169,631	115,637	15,097	304,877	271,565	4,115,260
\$	21,083	16,864	24,291	736,499	50,381	6,237	52,165	142,984	1,050,504
Crushed gravel.....Tons	270			474,587	844		9,756	5,030	490,487
\$	500			253,881	969		14,743	4,658	274,751
<b>Total.....Tons</b>	<b>203,416</b>	<b>608,528</b>	<b>1,055,817</b>	<b>8,146,433</b>	<b>595,549</b>	<b>438,319</b>	<b>888,216</b>	<b>795,637</b>	<b>12,752,515</b>
\$	<b>55,928</b>	<b>94,634</b>	<b>206,175</b>	<b>2,006,958</b>	<b>123,478</b>	<b>59,541</b>	<b>199,256</b>	<b>266,119</b>	<b>3,016,518</b>

\* Includes 20,600 tons valued at \$4,429 used in Prince Edward Island.

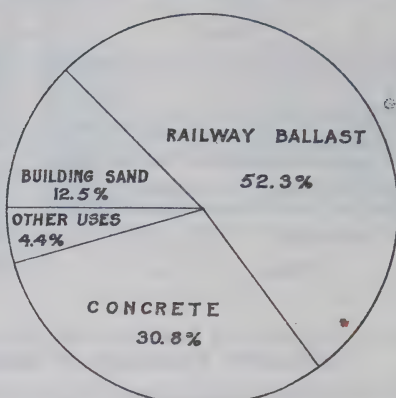
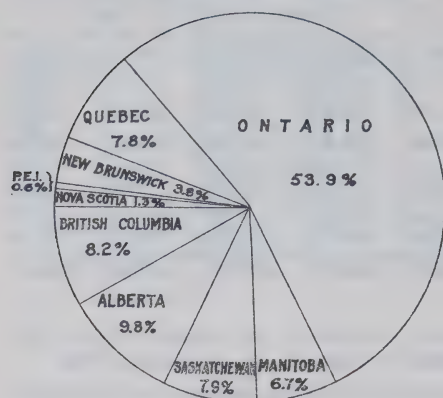
Table 211.—Production of Sand and Gravel in Canada, by Provinces, 1924

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total for Canada
Moulding sand.....Tons			3,361	114,099	742				118,202
\$			953	78,293	826				80,072
Building sand, etc.....Tons	4,225		1,057,864	1,149,788	45,259	4,205	22,216	379,252	2,662,809
\$	2,779		214,733	495,208	21,428	1,592	8,828	166,605	911,173
Other sand.....Tons	4,596	1,137	16,121	8,802	607		8,761	6,491	46,515
\$	4,136	352	2,389	8,138	600		4,475	2,256	22,346
Sand and gravel—(a) for railway ballast..Tons	233,649	113,612	642,197	2,135,002	223,648	676,897	535,120	504,896	*5,076,511
\$	32,663	17,692	51,733	371,251	24,662	88,558	54,924	54,235	*696,966
(b) for concrete, etc....Tons	52,913	27,148	472,418	2,219,063	89,279	21,611	9,897	194,334	3,086,663
\$	20,023	5,955	136,754	890,737	34,381	6,895	4,579	103,935	1,203,259
Crushed gravel.....Tons			5,184	547,530			39,600	20,486	612,800
\$			7,866	198,332			43,163	17,906	267,267
<b>Total.....Tons</b>	<b>295,383</b>	<b>141,897</b>	<b>2,197,445</b>	<b>6,174,284</b>	<b>359,535</b>	<b>702,712</b>	<b>615,594</b>	<b>1,105,459</b>	<b>11,603,500</b>
\$	<b>59,601</b>	<b>23,999</b>	<b>414,428</b>	<b>2,041,959</b>	<b>81,897</b>	<b>97,045</b>	<b>115,969</b>	<b>344,937</b>	<b>3,181,083</b>

\* Includes 11,490 tons valued at \$1,248 used in Prince Edward Island.

## PRODUCTION OF SAND AND GRAVEL IN CANADA 1922

### BY PROVINCES                      BY USES



### SAND-LIME BRICK

The total output of sand-lime brick in 1924 was 55,873 thousand valued at \$619,946 as compared with 60,080 thousand worth \$897,960 in the previous year.

Ontario was the principal producer; the 10 plants operating in that province accounted for practically the entire Canadian output.

The production of sand-lime brick is not reported in the totals for the structural materials industries in this report, as both the sand and the lime used have been so recorded; production of sand-lime brick is regarded as a manufacturing operation and the item is therefore shown in the report on the *Manufactures of Non-Metallic Minerals*, issued annually by the Bureau. But because of its association as a structural material, data regarding the production of sand-lime brick are here given.

**Table 212.—Sand-Lime Brick Manufactured in Canada, by Provinces, 1922, 1923 and 1924**

Province	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
	M	\$	M	\$	M	\$
Ontario.....	48,449	786,772	59,080	887,960	54,410	604,275
Manitoba.....	3,800	57,000	1,000	10,000	1,104	11,040
Saskatchewan.....	500	7,235	.....	.....	359	4,631
<b>Total.....</b>	<b>52,749</b>	<b>851,007</b>	<b>60,080</b>	<b>897,960</b>	<b>55,873</b>	<b>619,946</b>

### SLATE

The entire production of Canadian slate comes from deposits situated along the south shore of the St. Lawrence river in the province of Quebec. Mining of slate has been carried on in this province since about 1854, the maximum production, 6,935 tons valued at \$119,160 occurring in the year 1889. In 1924, as in the preceding year, no roofing slate was produced from the quarries in Melbourne Township, Quebec. The total sales for 1923, amounting to 1,836 tons valued at \$17,289, consisted of crushed green and red slate, for use in the manufacture of roofing paper. During 1922, the production amounted to 1,899 tons of crushed slate valued at \$14,871.

Imports of slate products into Canada during 1924 did not reach as great total values as in the preceding year. Customs figures did not show any exports of slate in 1923 or 1924.

Table 213.—Production in Canada and Imports of Slate, 1922, 1923 and 1924

	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
PRODUCTION— Crushed.....Tons	1,899	14,871	1,836	17,289		
IMPORTS— Roofing.....Squares	6,640	67,035	5,905	67,507	5,718	71,298
School-writing.....		112,885		111,922		74,879
Pencils.....		17,330		9,027		7,601
Mantles and manufactures of slate, n.o.p.....		73,974		77,390		66,624
<b>Total</b> .....		<b>271,224</b>		<b>265,546</b>		<b>220,402</b>

## STONE

Sales of stone quarried in Canada during 1924 totalled 4,768,014 tons valued at \$6,407,757 as against 4,111,334 tons valued at \$5,903,289 in 1923. This was an increase of 16 per cent, in quantity and 8.5 per cent in value. In point of value, Quebec was the largest producer, but having regard to quantity, Ontario had the greater output. British Columbia was next in importance and Nova Scotia, Manitoba, New Brunswick and Alberta followed in the order named.

Ontario produced more crushed stone than any other province but Quebec, had a greater production of monumental and ornamental stone, and also led all the other provinces in the production of rough and dressed building stone.

Limestone quarried and used by the operator in the manufacture of lime has not been included in this record; in order to avoid duplication of entries only the quantity and value of lime made are recorded.

Table 214.—Production of Limestone and Sandstone in Canada\*, 1909-1924

Year	Limestone	Sandstone	Year	Limestone	Sandstone	Year	Limestone	Sandstone
	\$	\$		\$	\$		\$	\$
1909.....	2,139,691	374,179	1915.....	2,312,081	249,336	1920.....	5,665,693	165,149
1910.....	2,249,576	502,148	1916.....	2,224,091	146,244	1921.....	5,155,046	78,036
1911.....	2,594,926	451,183	1917.....	2,283,659	261,256	1922.....	4,175,941	80,908
1912.....	2,762,936	329,352	1918.....	2,342,403	102,750	1923.....	4,475,921	66,547
1913.....	3,204,091	396,782	1919.....	3,074,815	86,577	1924.....	4,831,684	240,273
1914.....	2,672,781	487,140				<b>Total.....</b>	<b>52,165,335</b>	<b>4,017,860</b>

\*Data not available prior to 1909.

Table 215.—Production of Granite and Marble in Canada, 1886-1924

Year	Granite	Marble	Year	Granite	Marble	Year	Granite	Marble
	\$	\$		\$	\$		\$	\$
1886.....	63,909	9,900	1900.....	80,000		1913.....	1,653,791	249,975
1887.....	142,506	6,224	1901.....	155,000		1914.....	2,176,602	132,533
1888.....	147,305	3,100	1902.....	210,000		1915.....	1,525,553	158,027
1889.....	79,624	980	1903.....	200,000		1916.....	1,247,267	118,810
1890.....	65,985	10,776	1904.....	150,000		1917.....	639,412	55,820
1891.....	70,056	1,752	1905.....	226,305		1918.....	590,871	550
1892.....	89,326	3,600	1906.....	278,419		1919.....	850,563	213,982
1893.....	94,393	5,100	1907.....	194,712		1920.....	1,508,916	240,593
1894.....	109,936		1908.....	282,320	125,000	1921.....	937,894	172,720
1895.....	84,838	2,000	1909.....	454,824	158,441	1922.....	1,486,250	231,894
1896.....	106,709	2,405	1910.....	739,516	158,779	1923.....	1,159,303	201,518
1897.....	61,934		1911.....	1,119,865	162,783	1924.....	1,013,345	322,455
1898.....	81,073		1912.....	1,373,119	260,764	<b>Total.....</b>	<b>21,541,983</b>	<b>3,010,481</b>
1899.....	90,542							

Table 216.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1923

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	British Columbia	Canada
Building—							
Rough..... Tons	2,108	50	16,923	38,962	2,498	6,872	67,413
\$	17,600	530	106,790	151,499	17,589	47,759	341,767
Dressed..... Tons		450	16,297	1,289	2,000		20,036
\$		14,630	675,682	26,035	43,107		759,454
Monumental and ornamental—							
Rough..... Tons	60	452	5,196	4,151	65		9,924
\$	900	8,074	127,896	14,250	713		151,833
Dressed..... Tons	450	1,100	381	441		960	3,332
\$	20,500	73,014	22,875	14,336		33,800	164,525
Flagstone..... Tons				754			754
\$				5,429			5,429
Curbstone..... Tons		99	3,174	2,167		150	5,599
\$		1,835	22,140	13,978		2,500	40,453
Paving blocks..... Tons		215	14,717	11,351			26,283
\$		24,565	124,625	115,816			265,006
Limestone, for flux..... Tons	117,162		1,298	29,160		10,452	158,072
\$	98,500		1,263	34,800		12,000	146,563
Limestone for sugar factories, Tons	1,060	10,034	71,917	106,313		3,259	192,583
\$	4,250	19,481	73,770	112,265		7,284	217,050
chemical works, etc., Tons	17,742	200	12,642	65,560	12,863	51,316	160,323
\$	35,220	99	10,859	86,184	15,084	42,907	190,353
Rubble and riprap..... Tons	35,220	99	10,859	86,184	15,084	42,907	190,353
Crushed..... Tons	100	9,848	960,331	2,370,776	33,878	92,091	3,467,024
\$	120	23,855	1,166,921	2,284,560	41,784	103,616	3,620,856
<b>Total..... Tons</b>	<b>138,682</b>	<b>22,448</b>	<b>1,102,876</b>	<b>2,630,924</b>	<b>51,304</b>	<b>165,100</b>	<b>4,111,334</b>
\$	<b>177,090</b>	<b>166,083</b>	<b>2,332,821</b>	<b>2,859,152</b>	<b>118,277</b>	<b>249,866</b>	<b>5,903,259</b>
Per cent of total..... Quantity	3.37	0.55	26.83	63.98	1.25	4.02	100.0
Value	3.00	2.81	39.53	48.43	2.00	4.23	100.0

Table 217.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1924

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—								
Rough..... Tons	1,738		33,937	15,752	815		6,785	59,027
\$	19,740		207,682	44,539	9,498		40,713	322,172
Dressed..... Tons		30	20,644	1,149	1,200		650	23,753
\$		1,500	711,651	36,545	30,570	2,455	83,500	866,221
Monumental and Ornamental—								
Rough..... Tons	193	1,141	9,446	1,609	2			12,391
\$	2,338	16,384	127,143	10,312	39			156,216
Dressed..... Tons	201	481	636	65			950	2,333
\$	17,059	45,325	27,668	3,696			67,068	160,846
Flagstone..... Tons				719				719
\$				5,761				5,761
Curbstone..... Tons		702	11,383	6			200	12,291
\$		8,043	56,381	71			3,000	67,495
Paving blocks..... Tons		292	6,858	7,642				14,792
\$		4,171	96,957	61,184				162,312
Limestone, for flux..... Tons	54,899		7,373	218,429			24,421	305,122
\$	49,789		7,843	197,308			14,652	269,592
Limestone for sugar factories, Tons		11,732	68,631	104,207			2,632	187,502
\$		24,556	66,880	69,165			7,229	167,830
chemical works, etc., Tons								
\$								
Rubble and riprap..... Tons	8,334		15,205	90,888	5,945	200	48,036	168,608
\$	16,364		10,692	67,182	7,415	100	39,920	141,673
Crushed..... Tons	2,170	4,851	1,417,676	2,399,707	46,103	16,418	94,551	3,981,476
\$	6,534	14,132	1,612,623	2,293,602	46,354	16,762	97,629	4,087,636
<b>Total..... Tons</b>	<b>67,535</b>	<b>19,229</b>	<b>1,592,089</b>	<b>2,840,173</b>	<b>54,065</b>	<b>16,698</b>	<b>178,225</b>	<b>4,768,014</b>
\$	<b>111,824</b>	<b>114,111</b>	<b>2,925,520</b>	<b>2,789,368</b>	<b>93,876</b>	<b>19,317</b>	<b>353,741</b>	<b>6,407,757</b>
Per cent of total..... Quantity	1.4	0.4	33.4	59.6	1.1	0.4	3.7	100.0
Value	1.7	1.8	45.7	43.5	1.5	0.3	5.5	100.0

Table 218.—Production of Stone in Canada, by Kinds and by Provinces, 1923

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	17,296	54,892	118,222	102,750			3,164	19,448
New Brunswick.....	11,509	143,473	10,689	21,981			250	629
Quebec.....	29,240	436,902	1,057,284	1,671,309	2,473	201,518	13,879	23,092
Ontario.....	188,998	293,454	2,436,453	2,542,320			5,473	23,378
Manitoba.....			51,304	118,277				
British Columbia.....	151,389	230,582	13,711	19,284				
<b>Canada.....</b>	<b>398,432</b>	<b>1,159,303</b>	<b>3,687,663</b>	<b>4,475,921</b>	<b>2,473</b>	<b>201,518</b>	<b>22,766</b>	<b>66,547</b>

Table 219.—Production of Stone in Canada, by Kinds and by Provinces, 1924

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	7,554	33,021	57,069	56,323			2,912	22,480
New Brunswick.....	4,921	80,812	14,308	33,299				
Quebec.....	42,283	442,933	1,465,237	2,058,432	4,379	322,455	80,190	101,700
Ontario.....	214,691	208,219	2,614,911	2,551,111			10,571	30,038
Manitoba.....			51,065	93,876				
Alberta.....			16,418	16,762			280	2,655
British Columbia.....	150,522	248,360	27,053	21,881			650	83,500
<b>Canada.....</b>	<b>419,971</b>	<b>1,013,345</b>	<b>4,249,061</b>	<b>4,831,684</b>	<b>4,379</b>	<b>322,455</b>	<b>94,603</b>	<b>240,273</b>

Table 220.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1923

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Building—								
Rough.....	10,666	92,049	54,430	224,512	159	7,076	2,158	18,130
Dressed.....	4,440	119,437	13,971	451,082	1,625	188,935		
Monumental and ornamental—								
Rough.....	9,796	150,575	128	1,258				
Dressed.....	3,319	164,137	13	388				
Flagstone.....			200	1,000			554	4,429
Curbstone.....	3,411	26,307	12	168			2,167	13,978
Paving blocks.....	24,226	255,568	1,117	671			940	8,767
Limestone, for flux.....			158,072	146,563				
Limestone for sugar factories, chemical works, etc.....			192,583	217,050				
Rubble and riprap.....	68,218	76,393	88,097	107,042			4,008	6,913
Crushed.....	274,356	274,837	3,179,040	3,326,187	689	5,507	12,939	14,325
<b>Total.....</b>	<b>398,432</b>	<b>1,159,303</b>	<b>3,687,663</b>	<b>4,475,921</b>	<b>2,473</b>	<b>201,518</b>	<b>22,766</b>	<b>66,547</b>

Table 221.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1924

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Building—								
Rough.....	11,903	85,175	40,875	163,825	912	36,471	5,335	36,701
Dressed.....	3,810	81,826	16,575	416,760	2,588	280,280	780	87,355
Monumental and ornamental—								
Rough.....	12,223	154,181	97	1,194			71	838
Dressed.....	2,298	159,706	35	1,140				
Flagstone.....			5	52			714	5,712
Curbstone.....	12,275	67,331	16	164				
Paving blocks.....	14,602	160,612					190	1,700
Limestone, for flux.....			305,122	269,592				
Limestone for sugar factories, chemical works, etc.....			187,502	167,830				
Rubble and riprap.....	56,650	55,593	104,445	78,113			7,513	7,967
Crushed.....	306,208	248,918	3,594,389	3,733,014	879	5,704	80,000	100,000
<b>Total.....</b>	<b>419,971</b>	<b>1,013,345</b>	<b>4,249,061</b>	<b>4,831,684</b>	<b>4,379</b>	<b>322,455</b>	<b>94,603</b>	<b>240,273</b>

Table 222.—Production in Canada, by Kinds and by Provinces, and Imports and Exports of Stone, 1922, 1923 and 1924

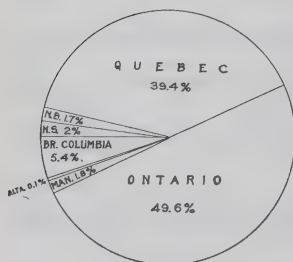
	1922		1923		1924	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION, BY KINDS—</b>						
Granite.....	457,925	1,486,250	398,432	1,159,303	419,971	1,013,345
Limestone.....	3,152,124	4,175,941	3,687,663	4,475,921	4,249,061	4,831,684
Marble.....	1,912	231,894	2,473	201,518	4,379	322,455
Sandstone.....	25,221	80,908	22,766	66,547	94,603	240,273
<b>Total.....</b>	<b>3,637,182</b>	<b>5,974,993</b>	<b>4,111,334</b>	<b>5,903,289</b>	<b>4,768,014</b>	<b>6,407,757</b>
<b>PRODUCTION, BY PROVINCES—</b>						
Nova Scotia.....	87,955	119,492	138,682	177,090	67,535	111,824
New Brunswick.....	12,027	104,730	22,448	166,083	19,229	114,111
Quebec.....	987,355	2,342,316	1,102,876	2,332,821	1,592,089	2,925,520
Ontario.....	2,317,265	2,969,926	2,630,924	2,859,152	2,840,173	2,789,368
Manitoba.....	34,356	106,638	51,304	118,277	54,065	93,876
Alberta.....	554	7,300	.....	.....	16,698	19,317
British Columbia.....	197,670	324,591	165,100	249,866	178,225	353,741
<b>Canada.....</b>	<b>3,637,182</b>	<b>5,974,993</b>	<b>4,111,334</b>	<b>5,903,289</b>	<b>4,768,014</b>	<b>6,407,757</b>
<b>IMPORTS—</b>						
Building stone.....	.....	371,490	.....	403,550	.....	267,699
Granite.....	.....	72,633	.....	158,864	.....	140,237
Marble.....	.....	294,206	.....	293,806	.....	291,380
Refuse stone.....	328,679	199,397	392,819	225,565	281,824	174,738
Manufactures of stone, n.o.p.....	.....	41,891	.....	52,048	.....	36,103
<b>Total.....</b>	<b>.....</b>	<b>979,620</b>	<b>.....</b>	<b>1,133,833</b>	<b>.....</b>	<b>910,157</b>
<b>EXPORTS—</b>						
Crushed.....	126,063	80,544	89,434	159,088	59,984	100,873
Ornamental, rough*.....	2,666	32,474	3,165	30,350	3,390	45,195
Building, rough†.....	2,357	13,364	1,302	12,575	2,059	18,680
Dressed.....	.....	7,870	.....	20,227	.....	5,365
<b>Total.....</b>	<b>.....</b>	<b>134,252</b>	<b>.....</b>	<b>222,240</b>	<b>.....</b>	<b>170,113</b>

\*Granite, marble, etc., unwrought.

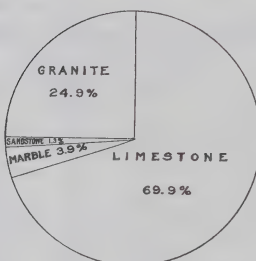
†Freestone, limestone, etc., unwrought.

## PRODUCTION OF STONE IN CANADA IN 1922.

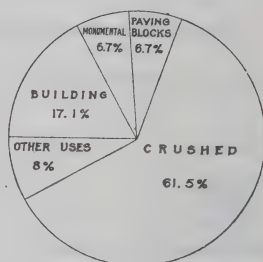
BY PROVINCES



BY KINDS



BY USES



## PART TWO

### GENERAL STATISTICS

*Supplementing the statistics reported in Part One, general reviews have been prepared showing for each principal group in the mineral industry of Canada, statistics of capital employed, number of employees, salaries and wages paid, fuel and electricity used, and power units employed. Following a general review of the mineral industry in Canada as a whole, there is a series of short articles, each of which traces the development of the mineral industry in a single province. General tables present the principal statistics of the industry as a whole, as well as by groups, and by provinces. There are separate sections each dealing with the general statistics pertaining to a particular industrial group, as the copper-gold-silver industry, nickel-copper industry, asbestos industry, etc.*

## GENERAL STATISTICS

## REVIEWS OF THE MINERAL INDUSTRY OF CANADA AND ITS PROVINCES

To meet the very general demand for a more comprehensive review of the mineral industry than is afforded by a record of commodity output, as presented in Part One of this report, there have been collected in the following pages, data on the industry in its many phases, which are designed to give the reader a wider knowledge of the growth and importance of Canada's third greatest primary industry. In order to present the subject in as acceptable form as possible this part of the report has been arranged in two main groups. The first section reviews the industry in each province, tracing the developments in the leading fields. Then follow general tables presenting for the whole of Canada, data on the number of mines in operation, capital employed by main groups of enterprises, the number of workers engaged and the sums spent in salaries and wages, cost of fuel and electricity, details regarding plant equipment and power consumption. Finally, there are individual sections devoted to a presentation of the leading features of each principal industrial group. In all these sections, the aim is to present in concise form, the salient points of interest in a subject that for great commercial importance and romantic charm is not excelled.

## Canada

As a general introduction to the subject, the following paragraphs are of interest. They are taken from the official contribution of the *Canadian Institute of Mining and Metallurgy* to the Empire Mining and Metallurgical Congress held in London, England, June, 1924, as printed in the Transactions of the Canadian Institute of Mining and Metallurgy, 1924. The paper was prepared by Prof. R. P. D. Graham of McGill University, Montreal.

"It is almost exactly two hundred years since the foundations of the mining and metallurgical industries in Canada were laid. There was nothing spectacular about this early start. It had to do with the most basic phases of these industries—the mining of coal and iron ore, and the manufacture of cast and wrought iron. At several points along the coast of Cape Breton Island, coal seams may be seen outcropping quite conspicuously, and it is probable that they had been observed, and possibly worked in a small way, in very early times. However that may be, these coal seams have the distinction of being the first in North America of which there is any printed record, reference to them appearing in a volume by Nicolas Denys which was published in Paris in 1672. Regular coal mining in the district did not commence until about fifty years later, however.

"The metallurgists started their operations along the north shore of the St. Lawrence river. Here, at many points between Montreal and Quebec, are to be found deposits of bog iron ore, and in 1730 a furnace for smelting such ore was established on the St. Maurice river. The St. Maurice forges continued in operation until 1880, and throughout that long period they were famed for the fine quality of castings produced, and also for a superior wrought iron.

"Other occurrences of minerals were doubtless observed from time to time in these early days as settlements spread, and as trading posts were established farther and farther afield. Of special interest in this connection is a map of the lakes of Canada, published in 1744, on which is given the location of a deposit of argentiferous galena (Añce à la Mine) on the eastern shore of Lake Timiskaming. This is one of the oldest known metalliferous deposits in North America, and it was the scene of active mining operations as recently as 1901; and yet, for at least one hundred and sixty years after it was known, there lay awaiting discovery, less than ten short miles to the northwest, the almost fabulously rich silver veins of what is now known as the Cobalt district.

"However, isolated discoveries such as that on Lake Timiskaming must have been entirely the result of chance, and not of even haphazard prospecting. As for systematic prospecting, it can hardly be said to have existed in Canada until nearly the middle of the nineteenth century, since, before that time, little or nothing was known of the geology of the country. In 1843, however, the Geological Survey of Canada was instituted by the Provincial Government, with Sir William Logan as Director. With a small but enthusiastic band of assistants, many of them explorers whom he himself had trained, he set about the herculean task of exploring, mapping, and geologically surveying eastern Canada. So vigorously was the work prosecuted that in 1863 he was able to publish a very comprehensive "*Geology of Canada*," a volume of nearly 1,000 pages

dealing with the southern portions of the provinces of Ontario and Quebec, and accompanied by an Atlas of geological maps. Special attention had been paid to mineral occurrences, both metallic and non-metallic, and where such were found or known, they were carefully examined as to their economic possibilities. These deposits are described in a section of 165 pages on economic geology.

"This period of 20 years, from 1843 to 1863, may be said to have marked the real inauguration of the mining industry in eastern Canada. Deposits of iron ore were opened up in various parts of Ontario and Quebec; numerous occurrences of copper ore were known and mined, especially in the Eastern Townships of Quebec, where the Acton mine had the reputation of being, in its time, the richest copper mine in the world; alluvial gold was obtained from the gravels of the St. Francis and other rivers on the south side of the St. Lawrence; and in Nova Scotia, lode-gold mining became established. This healthy growth of the industry may be attributed in very large measure to the influence of the Geological Survey. Both directly, as a result of its explorations and through the distribution of its reports and maps, and indirectly, by encouraging prospecting and disseminating information concerning Canada's mineral resources, especially through the exhibition of collections of Canada's minerals and ores at the principal British and International exhibitions, the Geological Survey played an enormously important part in firmly establishing the mineral industry of the Dominion, and in calling world-wide attention to Canada's actual and potential mineral resources. It only remains to add that Logan's successors in the Survey have at all times admirably maintained this close association and co-operation with the industry.

"Prior to the building of the Canadian Pacific railway across the continent, west Canada, beyond the Great Lakes was virtually isolated from the East. Settlement was slower, and it is thus not surprising that there is little or no record of mineral discoveries in the west until about the middle of the nineteenth century. Among the first of these was the finding of coal at Fort Rupert in 1835, and later, in 1858, the important discoveries of placer gold along the Fraser and other rivers were made. Notwithstanding this late start, however, British Columbia soon became the premier mineral-producing province of the Dominion, a position it maintained until 1906.

"While the establishment of the Geological Survey marks the first important epoch in the history of Canada's mineral industry, the completion, in 1885, of the construction of the Canadian Pacific railway across the continent opened a second chapter, and one of tremendous expansion. Vast new territories were rendered accessible, and in these it was often the prospector who led the way, with consequences that soon made themselves evident. The first important find was made near Sudbury, Ontario, in 1883, when, in blasting a cutting for the railway, a body of nickel-copper ore, for which the district has since become world-famed, was encountered. Similar good fortune was in store for British Columbia, and the nineties witnessed the discovery of a remarkable succession of ore-bodies, especially auriferous copper and argentiferous lead-zinc deposits, in the southeastern section of the province, between the railway and the International boundary. An idea of the rapidity with which the mining industry expanded during this period is best conveyed by figures. Thus, while for the year 1886 the total mineral production of the Dominion had a value of \$10,221,255, seven years later in 1893, the value had doubled, and in 1903 it amounted to \$61,740,513.

"But this transcontinental railway did not open up the whole of Canada. It permitted of a channel sample being taken, and events have proved that it was probably no more than a fair average sample. As transportation facilities were improved and extended, other ore deposits were found, as, for example, the silver veins of the Cobalt district, discovered in 1903 during the construction of the Timiskaming and Northern Ontario railway; and, largely as a result of the output from such new mines, the value of the total mineral production had again more than doubled by 1913, to \$145,634,812. Fluctuations during and following the war culminated in an output having the record value of \$227,859,000 in 1920; but apart from this abnormal period, the value of the annual mineral production has continued to rise.

"But other factors than the provision of increased transportation facilities have contributed to the remarkable growth of the industry. The staff of the Geological Survey has been considerably enlarged since the days of Logan, although it still remains painfully inadequate for the gigantic task with which it is entrusted, and much that might be accomplished with immediate benefit to the mining industry has perforce to remain undone. A Mines Branch also has been

established, these two together constituting the Federal Department of Mines. Except in the newer provinces of Manitoba, Saskatchewan, and Alberta, and in the Yukon and Northwest Territories, the control of mining lands, the granting of mineral rights, and the administration of mining laws, come under the jurisdiction of the individual provinces, and each of these has its own department or bureau of mines. As a result, there are numerous parties of geologists in the field in every province each season, and a very large proportion of their work is directed to the examination and geological mapping of districts where mineral deposits are known to occur or where such might be expected. These several departments of mines have rendered invaluable assistance to the mining industry, through the distribution of reports and maps, the framing of intelligent mining laws, and in innumerable other ways.

"The universities have played their part by training the men necessary to direct and carry on the industry. The courses in mining and metallurgical engineering, and in general and economic geology, offered by the leading universities of the country have the reputation among mining men everywhere of being models of their kind, and it may be stated that the vast majority of those responsible for the operation of Canadian mines and metallurgical plants, as well as practically all the officers of the departments and bureaus of mines, are Canadians who have received their training in the country. Nor has the prospector, that essential, though perhaps not always sufficiently appreciated, prop of the industry, been forgotten, and at several centres the provincial departments of mines have from time to time established classes where he can obtain instruction in the rudiments of mineralogy and geology. It may not be out of place here to express the opinion that any young man who proposes to follow the mining or metallurgical profession in Canada would be well advised to obtain his training in Canada, and, if at all possible, to take an engineering course at one of the universities.

"As the industry grew, and the number of men engaged in it increased, a demand arose for an association of some kind, through which mining men might meet together from time to time for the discussion of mutual problems, and to present papers dealing with mining methods, metallurgical practice, and allied subjects. To meet this need, the General Mining Association of the Province of Quebec was organized in January, 1891. In 1896 the Federated Canadian Mining Institute was established, and two years later the Canadian Mining Institute was incorporated, replacing the older organizations. For more than thirty years Nova Scotia has had its Mining Society, and in 1918 this became affiliated with the larger Canadian Mining Institute, which in 1920, broadened its title and became the Canadian Institute of Mining and Metallurgy. The Institute is thus representative of these industries from coast to coast, and its *Transactions* form a very complete history of the great progress which mining and metallurgical practice has made in Canada during the last quarter of a century".

### The Mineral Industry of Nova Scotia

Because of the geographical position of Nova Scotia on the Atlantic seaboard, this province was among the first in Canada to have its mineral resources explored. In mining, and especially in the production of bituminous coal, Nova Scotia has had an enviable reputation for over 200 years, while its gypsum deposits, which are among the most extensive in Canada, are only in the primary stage of development. In addition to these resources, there are deposits of iron, gold and antimony that have added much to the mineral wealth of the province. Non-metallics, such as dolomite, limestone, salt, and building stone, also have their place.

Protective tariff provisions designed to promote the coal-mining industry in Nova Scotia were made in 1877, when a duty was placed on American soft coal entering Canada; this made it possible for the Nova Scotia mine operators to compete with United States producers successfully in the markets along the St. Lawrence River. With the advent of the steel industry, using the iron ore from the neighbouring country of Newfoundland, the consumption of coal was further increased.

Gold was discovered in Nova Scotia about the year 1860, and the auriferous area has been variously estimated to represent from 3,000 to 5,000 square miles. Considerable work has been done on these gold ores, many of which contain arsenic, but of late there has not been much to report except that in the year 1923 when the price of arsenic was high, production was stimulated for a time.

Possibilities of production there are in many fields, but at the present time, Nova Scotia's mineral output is limited to the few commodities mentioned above.

### The Mineral Industry of New Brunswick.

Although there are many important economic minerals in the province of New Brunswick, development of these resources has not been as rapid here as in other provinces of the Dominion, probably because of the general concealment of the rocks by forests, which adds to the difficulty of locating mineralized areas suitable for commercial development. Actual mining has not progressed therefore to the extent that geological indications would warrant and very little of the province has been prospected.

At present, activities are restricted mainly to the mining of bituminous coal, the quarrying of gypsum and stone, and the production of petroleum, natural gas and lime.

Coal is found at several places in the broad carboniferous belt, extending westward from the coast, in Albert and Kent counties through Kings, Queens, Sunbury and York. There is a well-known deposit near Minto, Grand Lake District, at Beersville, on the coal branch of the Richibucto river and at Dunsinane, thirty miles southwest of Moncton, but it has been worked economically only in the vicinity of Minto. Here, the seam runs from sixteen to thirty inches in thickness and is found at various depths down to 120 feet. The production of coal in 1924 amounted to 217,121 tons which was valued at \$932,185.

Gypsum ranks next to coal and is found in localized deposits. It is quarried at Hillsborough and part of the production is there made into plaster by the Albert Manufacturing Company, who have a large and well-equipped plant. Owing to the excellent water transportation facilities, considerable quantities of crude gypsum are exported to the mills in the United States.

Natural gas and petroleum produced in New Brunswick come from the Stoney Creek district south of Moncton. Extensive deposits of bituminous or oil-shales occur in Albert and Westmoreland counties near Moncton, but as yet these have not been worked commercially.

Other materials such as wolframite—the ore of tungsten, copper in the form of chalcopyrite, iron ore in the form of siliceous magnetite, antimony, manganese and tripolite have also been located but production of these minerals, with the exception of manganese, is now very limited.

### The Mineral Industry of Quebec.

Quebec is the largest of all the Canadian provinces. It has a land and water area of 706,834 square miles, and comprises the territory lying between the Hudson Bay and Hudson Strait and Labrador on the north, the Gulf of St. Lawrence on the east, the province of New Brunswick and the United States on the south, and the province of Ontario on the west. Only the southern part of the province has ever been examined for mineralized areas, and until recently, interest has been focussed on the non-metallic minerals of the province, as the main source of mineral wealth. In 1922, copper ores carrying gold were discovered in what is commonly called Northern Quebec, but this term really refers to a section lying south of the main line of the Canadian National Railway, and just east of the Ontario boundary; it is a continuation of the mineralized belt of the Kirkland Lake area that has added to Ontario's prominence as a mining area during recent years. The development of this section promises to be very extensive and with the introduction of transportation and smelting facilities, a large mining industry will no doubt be built up.

So far, the non-metallics have provided the greater part of the mineral output. Asbestos is the most important mineral product of Quebec. Other minerals, arranged in order of their relative importance are: mica, feldspar, magnesite, iron oxides, quartz, soapstone, pyrites, and graphite. In the older and better known sections of the province there are copper, lead and zinc properties, which are operated on a small scale. Molybdenite and chromite have also been mined at different times when the market warranted an output of these minerals.

In recent years the development of hydro-electric power in Quebec has proven a great stimulus to industrial activity, particularly in the Shawinigan Falls area. Other power sites have been, and are being developed on a large scale and there is no doubt that electrochemical and electro-metallurgical enterprises, as well as other productive concerns using large quantities of electric power in their processes, will thrive well in this province in the future.

### The Mineral Industry of Ontario.

The province of Ontario may be described as the central province of the Dominion; Hudson Bay and James Bay are on the north, the St. Lawrence River and the Great Lakes constitute the greater part of the southern boundary, the province of Quebec lies immediately to the east, and

Manitoba adjoins Ontario on the west. Traversing the province in easterly and westerly directions, the main lines of the Canadian National and Canadian Pacific Railways, with their many branch lines provide an extensive system of transportation. The main line of the Canadian Pacific Railway from Montreal to Winnipeg crosses the rich Sudbury section in a westerly direction, then runs along the north shore of lake Superior and through the lake of the Woods district. In the vicinity of Sudbury are the famous nickel-copper properties which supply the greater part of the world's nickel. The Temiskaming and Northern Ontario Railway connects North Bay and Cochrane and runs through the rich silver camps of the Cobalt and South Lorrain areas and has branch lines extending to other silver camps and to the gold camps of Kirkland Lake and Porcupine.

Mining was carried on in Ontario as far back as 1770, when copper was recovered from mines on the shores of Lake Superior. Thus, although very little mining of any consequence was done until recent years, this province early took its place in the mining history of Canada. About the year 1800, the first iron furnace in the province was erected in Leeds county, and a few years later a blast furnace for the smelting of bog ores was built at Normandale in Norfolk county. This initial effort proved a failure but later another attempt was made and smelting was carried on as a successful enterprise until 1847. Other iron furnaces were established in different parts of this older section of Ontario, but their operations were never very successful. In 1899 the Algoma Steel Corporation of Sault Ste. Marie opened the Helen mine on the northeast shore of Lake Superior, and other iron properties, namely the Magpie mine and the Moose Mountain mine, have also been operated by this company. At the present time there is practically no production of iron ore in Ontario, the steel companies finding it more economical to bring in ore from the United States.

Construction of the Canadian Pacific Railway in 1883 led to the discovery of the rich nickel-copper ores in the Sudbury districts. Fortunately, about this time also, it was found that the addition of nickel in the manufacture of steel armour plate made the plate much stronger and harder and therefore more useful. For some years after the opening up of the Sudbury area, one of the larger properties was operated as a copper mine, the nickel in the ore not being detected until about 1887; to-day, the presence of nickel in that ore is the more valuable component. About 90 per cent of the world's output of nickel comes from the Sudbury area. The deposits there are very great. These ores also carry precious metals such as gold, silver, platinum, palladium, rhodium, and other related metals.

Ontario has the distinction of having had the first producing oil well on the American continent. This well was dug at Oil Springs in Lambton county in the year 1858, and from that time forward, oil wells have been discovered in other sections of that part of Ontario. However, no large oil fields have been found since 1905, and consequently the annual production has been steadily declining despite the additional production of a few small new fields.

As far back as 1866 gold was discovered in a spectacular occurrence at the Richardson property, Hastings county, and that district was the scene of a small gold rush at that time. Other properties in the same vicinity were worked intermittently, but at the present time no gold is being recovered from that area. Other finds were made from time to time in various parts of the province, and in 1899 Ontario reported a production of the yellow metal valued at \$421,591.

Five years after this, the Temiskaming and Northern Ontario Railway was projected and built from North Bay in a northerly direction. This opened up a country of which, hitherto, little had been known, and fortunately, passed right through the now famous Cobalt area, which was thus discovered in 1903. The finding of such a rich silver deposit led to intense prospecting on either side of the railway; the silver camps of Gowganda, Elk Lake and South Lorrain and the rich gold areas of Porcupine and Kirkland Lake are the present outcome of these early endeavours.

Although the production of silver has fallen off to some extent in late years, intensive prospecting underground has resulted in the finding of blind veins in some of the older properties; these have helped to maintain the silver output. Gold production on the other hand has grown apace. Some companies with proven ore bodies have augmented their milling facilities, and increased their outputs. Through intensive underground exploration many others are changing prospects into mines.

Mention may here be made of the Silver Islet mine on an extremely small island off Thunder cape in lake Superior which was worked for fifteen years or more, and which produced in the neighbourhood of \$3,500,000 worth of silver. This property was extremely rich, but was at one time flooded with water, and any attempt to work it since has met with very little success; diamond drilling has disclosed nothing of value at depth.

Lead is known to occur in different sections of Ontario, but until recent years little production was reported. In 1915, however, the Kingdon Mining, Smelting and Manufacturing Company, Limited, opened up a property near Galetta in Carleton county, and production of lead has increased steadily since that time.

Ontario mineral deposits include a large number of non-metallic minerals of economic value. The largest mica mine in Canada is located near Sydenham in Frontenac county, and this county also supplies the greater part of the feldspar produced in the province. Tale is mined in the vicinity of Madoc in Hastings county. The salt-producing sections of the province are in the southwestern part. No rock salt is mined, the entire output coming from brine pumped from wells; the development of the salt industry dates back to 1865 when the first well was sunk at Goderich in Huron county in a search for oil.

Natural gas was discovered in Ontario in December, 1888, in Essex county near the present town of Leamington, and in the following year a well was opened up in Welland county about 25 miles west of Niagara Falls. At that time there was little market in Canada for natural gas, so the gas from these wells was piped to the neighbouring cities of Detroit, Toledo and Buffalo. Some of the older wells are now becoming depleted, but new wells are brought in from time to time. The natural gas supply, however, is now being conserved under government supervision so that the most economic use may be made of the available supply.

The growth of the clay products and construction materials industry has grown with the increasing demand for such commodities. Portland cement is manufactured in various sections of the province where suitable limestone and clay have been found at convenient distances from the large markets for this class of material. Hydrated lime and quicklime are also being manufactured and the growth of the brick industry has been rapid. The construction of highways and the building of concrete structures has enlarged the demand for gravel and crushed stone. These apparently common materials form a very large part of the non-metallic mineral production of the province.

### The Mineral Industry of Manitoba

Most the material in this section is taken from a paper prepared by Prof. R. C. Wallace of the University of Manitoba, who is recognized as a leading authority on the mineral possibilities of Manitoba.

The earlier work on the mineral resources of the province was confined to non-metallic materials. This was to be expected in an area where the population was massed in the agricultural lands where metallic deposits do not occur, and where building materials and other non-metallic minerals are in demand. The earliest mineral industry was the extraction of salt from the brine springs on the west side of lake Manitoba and lake Winnipegosis. From this source freedmen from the Hudson's Bay Company service manufactured salt during the period 1800-1876, and probably even earlier, and supplied the needs of the posts and settlements on the Assiniboine, Red and Saskatchewan rivers. As agricultural communities grew, and as the Fort Garry Settlement reached the proportions of a town, building materials came into demand. The outcrops of limestone at Lower Fort Garry, Bishop's Quarry, near St. Andrew's Locks, the East Selkirk beds, and later Garson (Tyndall) supplied the stone for foundations and for the more imposing buildings; while the limestone boulders which were plentifully distributed in the drift materials were everywhere burnt for lime. In the late nineties the gypsum deposits northwest of lake St. Martin were opened up, and the calcined product was conveyed by boat from old Gypsumville, on lake Manitoba, to Totogan and thence by rail to Winnipeg. From that date there has been continuous operation of the gypsum industry, though the route is now all-rail, and the gypsum is calcined in Winnipeg. In the present century the brick industry developed at several towns in the province, a natural cement plant was established at Babcock, and a Portland cement plant at Tuxedo, using limestone drawn from lake Manitoba. Except for the years of stagnation following the war, the building material industry has had a steady and healthy growth.

In fuels, the history of development has been less encouraging. While the coal deposits of Alberta were yet untouched, considerable interest was shown in the coal seams which were known

to occur in Turtle mountain in southwestern Manitoba. During the nineties of the last century mining was done on the northwestern flank of the mountain at the old McArthur mine, and at the Varden mine; but for over twenty years no coal has been mined in that area. The opening of the Estevan field, from which the first coal was brought down the Souris river to Winnipeg by barge, has made available a lignite area of much greater extent and more feasible exploitation: and the Turtle mountain area will, in future, probably serve only local demand. In many places, drilling has been carried on for oil, but without success; though at Waskada and in isolated wells elsewhere natural gas has been found in quantities sufficient for local use.

The history of metalliferous mining development lies within the last fifteen years. Some prospecting had been done before 1910 in the northern areas of the province, but development work dated from that time. The stimulus, which successful gold-mining development in northern Ontario has given since that date, to Canadian mining has had a marked effect on exploratory work in northern Manitoba. The actual result in established mining industry is as yet small. A small high-grade copper sulphide deposit was mined at the Mandy property in northwestern Manitoba during the years 1916-1919. The Rex mine has been producing gold while development work is proceeding. From the Luleo and Gold Pan properties east of lake Winnipeg some gold was produced. But during those years of search, a large low-grade copper sulphide deposit was discovered in northwestern Manitoba in the Flin Flon property which has been carefully investigated, and will be developed when conditions are favourable. Gold has been found in several areas, north of the Hudson Bay Railway, and east of lake Winnipeg, and important mining companies are engaged in developing prospects in those several fields. There is as well a changing attitude on the part of the people of the province, and the belief has gained ground during those years of exploration that the Precambrian areas of Manitoba—more than three-fifths of the land surface of the province—may, through judicious expenditures of capital, yield a return in gold and copper which will be an important contribution to the wealth of the province.

### **The Mineral Industry of Saskatchewan.**

Saskatchewan, the great grain-growing province of the Dominion, lies between Alberta and Manitoba. While the greatest development in this province so far has been in agriculture, there is each year an appreciable production of lignite coal, clays and clay products, sand and gravel, sodium sulphate, and occasionally other mineral products. Large clay deposits, both of fireclay and of clay suitable for the manufacture of pottery, occur south of Moose Jaw and the economic development of these deposits on a great scale is only a matter of time. Large areas of unprospected territory in the northern part of the province are underlain by the same Precambrian rocks that have proved mineral-bearing in other parts of Canada. In this territory lode gold has been reported near Beaver lake, and iron and other metallic minerals near lake Athabasca. In connection with the sodium sulphate deposits, it may be noted that these occur as lakes which are solid at certain seasons, and mushy or even liquid at other times. Investigations have been carried on for several years by the Mines Branch at Ottawa to determine the commercial possibilities of these areas. Available tonnage has been blocked out and some deposits have been worked successfully. Shipments of sodium sulphate from Saskatchewan have reached Ontario points and the use of the natural sulphate has partially replaced the manufactured product in some fields. Development of the lignite deposits has progressed to a greater extent in Saskatchewan than the production of any other mineral in that area. Most of the mines are operated on a small scale, largely to meet the needs of the surrounding country, and many of them are only worked in the winter months, as the owners find it more profitable to grow wheat than to mine coal during the summer season.

### **The Mineral Industry of Alberta.**

The province of Alberta lies immediately east of British Columbia, the summit of the Rocky Mountains marking its western boundary as far north as 54°, north latitude. From that point, northerly, the line follows the 120th meridian to Mackenzie district. Alberta is for the most part, a grazing and wheat-growing country, but the coal mines which are located in the area immediately to the east of the mountains, contribute largely to the mineral production of Canada. Natural gas is also of considerable importance in Alberta as a fuel for domestic and industrial purposes. Prospecting for oil has been carried on over considerable areas and some success has been attained. Gold is also known to occur in the gravels underlying some of the rivers.

As in Ontario, where the opening of mining areas followed the building of railroads, so also the construction of the Canadian Pacific Railway and the Canadian National Railway through the mountain led to the economic exploitation of the coal areas in Alberta. The famous Crow's Nest Pass, through which the southerly branch of the Canadian Pacific Railway transcontinental line passes, has coal within easy proximity to the railroad. Along the main line of the same railway which enters the mountains near Calgary and Banff, a large amount of work has also been done in the vicinity of Bankhead, and quantities of semi-anthracite coal have been produced, but these workings are closed down at the present time. The Canadian National Railway running west from Edmonton passes through coal areas for a considerable distance.

Deposits of bituminous sands in the northern part of the province along the Athabaska river have become of economic importance in recent years. Experiments are being carried on by the University of Alberta at Edmonton, and by officials of the Mines Department at Ottawa, on methods of extracting the bitumen from the sands.

### The Mineral Industry of British Columbia

British Columbia, Canada's mountain province, has been associated with mining for many years. From the early days of the Cariboo rush in 1858 which followed the finding of placer gold in California in 1849, until the present time, this western province has always occupied a conspicuous place in the mineral industry of the Dominion. It is a province of mountains and valleys, swift running rivers and wide fertile tracts between the main ranges. It has an area of 355,855 square miles in extent, of which 353,416 square miles are land and 2,439 square miles are covered with water.

Broadly speaking there are three main mountain systems, the Coast range, on the west, the Columbia system which includes the Cariboo, Selkirk, and Purcell ranges in the centre and the Rocky Mountains on the east, the summit of the latter forming the provincial boundary of Alberta and British Columbia as far north as latitude 54°.

In the southerly sections of the province the main rivers are the Fraser, the Columbia and their tributaries while farther north, the Skeena, the Stikene and the Naas and their tributaries empty into the Pacific ocean. The Peace river, which has its headwaters in the northeastern section, flows in a southeasterly direction and then north to Great Slave lake in Mackenzie district after which it joins the Mackenzie river by way of the Liard, and thence reaches salt water at the Arctic ocean.

Transportation which did so much to open up the southern section of the province when the Canadian Pacific Railway was built, has been greatly augmented in recent years by the construction of the Canadian National Railway to Prince Rupert, and the Pacific Great Eastern, and Canadian Northern, now branches of the Canadian National, form the main line of the Canadian National down through the central sections of the province to tidewaters at Squamish and Vancouver, respectively.

As soon as the easily-won gold began to show signs of depletion from the creek bottoms mining men commenced to prospect for mineral in place, and to-day, British Columbia has in the Sullivan mine, the largest lead-zinc mine in the British Empire, leads all the other provinces in copper production, and stands second in gold and silver.

Coal is British Columbia's most important non-metallic mineral. It is found in abundance on the east coast of Vancouver island, in the south-eastern portion of the province, and also to a less extent, in small detached basins in the northern sections of the province. Other non-metallics produced in 1924 were quartz, pyrites, pulpstones, sodium carbonate, talc, iron oxides and gypsum.

As arranged, at the time British Columbia joined Confederation, all geological work and mapping is done by the Dominion Government, and parties are sent annually to British Columbia for this purpose. The Provincial Department of Mines assists very materially in the opening up and development of prospects and mines. The province is divided into six mining districts, each supervised by a resident engineer, whose duty it is to carry on mineral surveys and to assist prospectors and others with such advice as may be necessary and may come within the scope of a mining engineer's work.

Among the outstanding mines of British Columbia are the Premier mine, a gold and silver property situated at the northerly end of the Portland canal in northern British Columbia, and the Sullivan mine, a rich lead and zinc deposit, at Kimberley in East Kootenay, owned and operated by the Consolidated Mining and Smelting Company of Canada, Limited. Leading copper properties, operated by the Granby Consolidated Mining, Smelting and Power Company of Anyox on the Portland canal in northern British Columbia, and by the Britannia Mining and Smelting Company on Howe Sound, a short distance north of Vancouver, contribute largely to the copper production of the province. Many silver-lead-zinc mines of the Slocan district that have been operated intermittently for a number of years, have been given a new lease of life recently because of the developments in smelter practice and because of the comparatively high prices which the metals from such ores now command.

The Premier mine, after many hard knocks, was finally brought to the producing stage and into the dividend class by the American Smelting and Refining Company, Limited, who acquired the controlling interest in this mine in the fall of 1919.

The Nickel Plate mine at Hedley in the Similkameen Valley is of interest as it is the only property in the province credited as being a producer of arsenic. The ore from this mine is concentrated and cyanided, the concentrates being shipped to Tacoma for treatment. Payment is made for some of the arsenic as well as for the gold content. Gold bullion from this mine is shipped to the Dominion Assay Office at Vancouver.

High prices for lead and zinc during 1924 fitted in well with the successful research work carried on by the staff of the Consolidated Mining and Smelting Company of Canada, Limited at Trail. Results of these investigations, with respect to economic recovery of the metals from the refractory ores of the Sullivan mine, were so satisfactory that when the large concentrator was put into commission at Kimberley, recoveries exceeded expectations, the result being that the smelter and refinery at Trail, were not large enough to handle the output of the mine; this temporary limitation made it necessary to export zinc concentrates to Belgium and to the Anaconda Copper Company at Black Eagle, Montana, U.S.A.

The total capital investment in British Columbia mining operations in 1924 amounted to \$107,611,494 divided as follows:—copper-gold mining, \$17,303,513; gold ore mining, \$10,418,141; silver-lead-zinc mining, \$8,618,265; smelters, \$28,772,416; coal mining and other non-metallics, \$34,430,482; and structural materials, \$8,068,677. Employees connected with these various enterprises numbered 12,422. Salaries and wages totalled \$19,876,613. Metallic mining and smelting industries employed 6,394 men and paid out \$10,788,859 in salaries and wages. Coal mining and other non-metallic mining concerns employed 5,221 men and paid \$8,069,720 in salaries and wages. Producers of structural materials employed 807 men and paid \$1,018,034 in salaries and wages.

### The Mineral Industry of the Yukon Territory.

The Yukon Territory lies in the extreme northwest section of the Dominion of Canada. Immediately to the west is Alaska, and on the east, the Mackenzie district, while the province of British Columbia is adjacent to the greater part of its southern boundary. Alaska was originally owned by Russia, and it comprised that territory lying west of the present Yukon Territory, and a section of the western coast down as far as a long narrow inlet known as the Portland Canal. Russia claimed the north Pacific coast down to latitude 51°N, but in the treaty of 1824 the boundary was fixed at 54° 40'N, and in the following year a treaty was concluded by which Russia relinquished to Great Britain her claim, not only to the region below 54° 40'N, but also to the vast interior occupied by the Hudson's Bay Company up to the frozen ocean. In 1825, the southern and western boundaries of the British possessions were established, but owing to certain ambiguity, the boundary between what are now British Columbia and Alaska, was not very well established. In 1867, Alaska was purchased from Russia by the United States. In the summer of 1896, alluvial gold was found in the Yukon District, and immediately a section of the North American continent which up to this time had been considered of little economic value, became the cause of serious controversy between Canada and the United States because of the doubt as to the proper location of the boundary line of Alaska. Finally, the question was settled in 1903 by the award of the Alaska Boundary Tribunal.

The main rivers of this territory are the Peel, the Porcupine, the Yukon and its tributaries such as the White river, the Stewart river and the Pelly. Dawson City, which had a population

of 9,142 during the gold boom, is occupied now by 975 people. There is one railroad, the White Pass and Yukon, which runs from Skagway, Alaska, northerly to White Horse. From there, passengers embark on the river boats and go down the Yukon river to Dawson City. The railroad was constructed along the route most travelled during the days in which the early prospectors were entering the territory.

When the news of the wonderful gold discoveries reached the outside world, men from all walks of life flocked to this new district, and the stories of the hardships of the life have been told in prose and verse by Robert W. Service, a young bank clerk who lived through the days when Dawson City was at its height.

Between 1898 and 1905 upwards of a \$100,000,000 in gold was taken from the gravels of Bonanza, Eldorado, Hunker, Dominion and Sulphur Creeks and their tributaries. Many of the famous creek claims on Bonanza and Hunker are now being worked by the dredging process, and the terraces of the equally famous White Channel are being washed down by hydraulic methods.

Since 1905, production of gold has gradually decreased; in 1919, the output was valued at about \$1,900,000 and in 1924 at \$720,000. Although there are a great many individual miners, the report of their production is not very extensive and the greater part of the gold is recovered by large hydraulic or dredging companies; five such companies report annually.

Of late years, the Mayo district on the Stewart river has come into prominence because of the silver-lead ore discovered there. Two companies, the Treadwell Yukon and the Keno Hill operated in this district during 1924. The ore is mined under very difficult circumstances, owing to bad climatic conditions, and is taken down to the river and piled there ready for transportation to the smelters when navigation opens. Because of the high cost entailed in shipping this ore to the smelter, only high-grade material can be transported economically, and as it has been impossible, because of the cold, to operate a concentrating plant on the surface in that vicinity for any length of time, it has been decided to construct a concentrator underground in order to bring the low-grade ore up to a good shipping grade.

Other economic minerals such as copper and antimony are known to occur, but up to the present time there has been no report of production.

Among the non-metallic minerals, coal is the only one of any importance, and it is known to occur in the Yukon in at least eighteen distinct areas. In thirteen of these, coal of economic importance has been discovered. The production, however, has been small, partly because there has been little demand for coal and partly because only very few of the properties are conveniently situated for shipping purposes.

## GENERAL TABLES

Under this section are included the principal statistics for the year 1924 and they are shown under the three main headings *Metallics*, *Non-metallics* and *Structural Materials and Clay Products*. In the section on *metallics* the net values given to ore shipped by the mines, were in many cases nominal and were made up from book values used by the companies in crediting the mining part of their enterprises.

In the *metallic* section it has been found difficult to separate the actual mining operations from milling and these are taken as one. The smelting or refining operations have been separated where possible from milling operations and reviewed under the title "*Metallurgical Works*."

The values of the *metallic* production given in the following tables were as reported by the operating companies and in each case were the settlements received for shipments. The totals, therefore, indicate more nearly the actual return to the different industries than do the values for the several metals in Part I of this report where in the majority of cases the values are computed by using the average New York prices for the year. The tables immediately following cover every branch of the three main divisions of the mining industry and show shipments and net returns, capital employed, number of employees, salaries and wages paid, fuel costs, miscellaneous expenses and power used throughout the industry.

**Table 223.—Summary of Principal Statistics Relative to the Mining, Metallurgical, Structural Materials and Clay Products Industries, Operating Plants in Canada, 1924**

	Number of active oper- ators	Number of oper- ating plants or mines	Capital employed	Number of em- ployees	Salaries and wages paid	Miscel- laneous expenses	Cost of fuel and electricity	Total expen- ditures	*Net value of bullion, ore, concen- trates or residues shipped from the mines, and smelters
			\$		\$	\$	\$	\$	\$
<b>METALLIC—</b>									
Auriferous quartz min- ing and milling.....	70	70	83,982,765	6,738	10,500,140	6,925,027	1,559,406	18,984,573	31,298,107
Silver-cobalt mining and milling.....	26	34	41,013,466	1,769	2,534,304	2,479,316	468,651	5,482,271	6,594,032
Silver-lead-zinc min- ing and milling.....	82	94	12,328,511	1,936	2,943,635	802,882	474,343	4,220,860	16,600,970
Copper-gold-silver mining and milling.....	15	15	119,099,845	2,118	3,292,228	1,855,511	366,153	5,513,892	5,226,859
Placer mining.....	89	1,404	21,871,256	264	389,079	.....	.....	389,079	21,038,013
Nickel-copper mining and milling.....	3	7	37,189,778	1,421	1,880,823	1,673,492	150,460	3,704,775	4,235,934
Iron mining and briqu- etting.....	4	4	5,000	42	16,436	990	4,010	21,436	17,394
Iron blast furnaces.....	.....	.....	.....	.....	.....	.....	.....	.....	54,028
Metallurgical works....	7	9	66,337,664	5,521	8,136,251	6,884,890	4,765,483	19,786,624	21,760,273
<b>Total.....</b>	<b>296</b>	<b>1,637</b>	<b>281,828,285</b>	<b>19,809</b>	<b>29,692,896</b>	<b>20,622,108</b>	<b>7,788,506</b>	<b>58,103,510</b>	<b>86,825,610</b>
<b>NON-METALLIC—</b>									
Asbestos.....	15	15	43,216,966	2,597	2,977,304	2,173,991	760,046	5,911,341	6,710,830
Coal mining.....	451	520	146,711,531	27,183	35,123,490	.....	4,358,987	39,482,477	53,593,988
Feldspar.....	25	25	953,525	290	223,937	.....	16,866	240,803	358,540
Graphite.....	4	4	647,947	75	55,449	30,000	12,163	97,612	76,117
Grindstones.....	5	5	156,095	76	64,312	.....	5,260	69,572	130,824
Gypsum.....	14	15	4,423,697	1,219	1,114,468	458,268	181,003	1,753,739	2,208,108
Mica.....	50	50	249,876	223	127,201	22,866	5,532	155,599	357,272
Natural gas.....	186	2,031	50,561,757	1,240	1,315,405	821,276	3,059	2,139,740	5,708,636
Oxides, iron.....	5	5	193,633	38	33,221	34,428	16,815	84,464	91,160
Petroleum.....	119	2,473	5,650,086	158	152,957	15,314	18,656	186,927	467,400
Quartz.....	11	11	991,863	171	172,397	44,848	34,281	251,526	323,156
Salt.....	11	12	2,479,563	364	431,618	424,578	342,118	1,198,314	1,374,780
Talc.....	6	6	695,786	61	59,220	.....	18,351	77,571	154,480
All other non-metallie	33	34	2,428,619	136	82,937	129,904	14,948	227,789	240,718
<b>Total.....</b>	<b>935</b>	<b>5,206</b>	<b>259,360,944</b>	<b>33,831</b>	<b>41,933,916</b>	<b>4,155,473</b>	<b>7,788,085</b>	<b>51,877,474</b>	<b>71,796,009</b>
<b>STRUCTURAL MATERIALS AND CLAY PRO- DUCTS—</b>									
Clay products.....	205	210	29,810,994	4,120	4,041,318	.....	1,879,094	5,920,412	9,215,077
Cement.....	6	10	36,766,574	1,837	2,531,622	1,524,158	2,872,711	6,928,491	13,398,411
Lime.....	44	49	5,165,964	927	970,672	757,898	740,878	2,469,448	3,178,541
Sand and gravel.....	558	558	5,194,037	927	848,741	104,136	134,378	1,087,255	2,441,914
Stone.....	170	170	14,317,148	2,877	2,768,256	1,329,233	383,800	4,481,289	6,407,757
<b>Total.....</b>	<b>983</b>	<b>997</b>	<b>91,254,717</b>	<b>10,688</b>	<b>11,160,609</b>	<b>3,715,425</b>	<b>6,010,861</b>	<b>20,886,895</b>	<b>34,641,700</b>
<b>Summary by Classes—</b>									
Metallic.....	296	1,637	281,828,285	19,809	29,692,896	20,622,108	7,788,506	58,103,510	86,825,610
Non-Metallic.....	935	5,206	259,360,944	33,831	41,933,916	4,155,473	7,788,085	51,877,474	71,796,009
Structural materials and clay products.....	983	997	91,254,717	10,688	11,160,609	3,715,425	6,010,861	20,886,895	34,641,700
<b>Total.....</b>	<b>2,214</b>	<b>7,840</b>	<b>632,443,946</b>	<b>64,328</b>	<b>82,787,421</b>	<b>28,493,006</b>	<b>19,587,452</b>	<b>130,867,879</b>	<b>193,263,319</b>

\*Net value here is gross value less freight and treatment charges.

1 Does not include capital of Granby Co., Anxox, B.C.

2 Includes \$420,750 value of placer output for B.C.

3 Includes 1 manganese producer in N.B.; 1 molybdenum producer in Quebec.

4 Value of pig iron made from domestic ore less net value of the domestic ore.

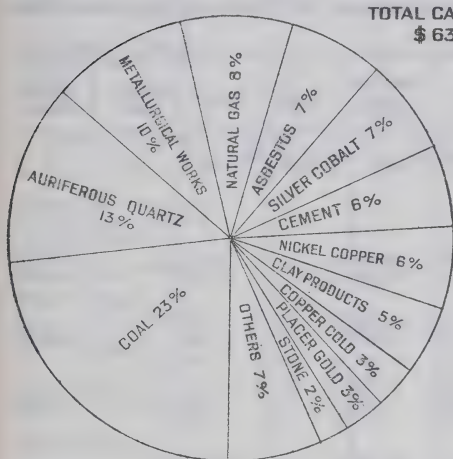
5 Value of shipments from metallurgical works less cost of ores, concentrates, matte, etc. treated as this latter value was included in the credits to the mines and mills.

**Table 224.—Summary of Principal Statistics Relative to the Operating Plants in the Mining, Metallurgical, Structural Materials and Clay Products Industries, in Canada, by Provinces, 1924**

—	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Total expenditures
			\$		\$	\$	\$	\$
Nova Scotia.....	72	103	59,608,296	14,172	14,247,382	203,533	2,772,595	17,223,510
New Brunswick.....	39	85	3,362,851	1,190	1,104,918	152,536	120,950	1,378,404
Quebec.....	240	242	77,163,613	6,953	7,300,935	3,750,548	2,800,763	13,852,246
Ontario.....	1,120	5,255	261,071,390	19,265	24,624,854	16,402,653	8,679,474	49,706,981
Manitoba.....	24	25	7,973,261	541	612,891	145,160	268,250	1,026,301
Saskatchewan.....	81	81	4,157,426	678	669,000	83,752	65,641	818,393
Alberta.....	387	446	87,003,765	8,716	13,684,225	864,623	991,549	15,540,397
British Columbia.....	159	194	107,611,494	12,422	19,876,613	6,686,727	3,770,384	30,333,724
Yukon.....	92	1,409	24,491,850	391	666,603	203,474	117,846	987,923
<b>Canada.....</b>	<b>2,214</b>	<b>7,840</b>	<b>632,443,946</b>	<b>64,328</b>	<b>82,787,421</b>	<b>28,493,006</b>	<b>19,587,452</b>	<b>130,867,879</b>

## DISTRIBUTION OF THE CAPITAL EMPLOYED IN THE MINING INDUSTRY IN CANADA 1924

### BY INDUSTRIES



### BY PROVINCES

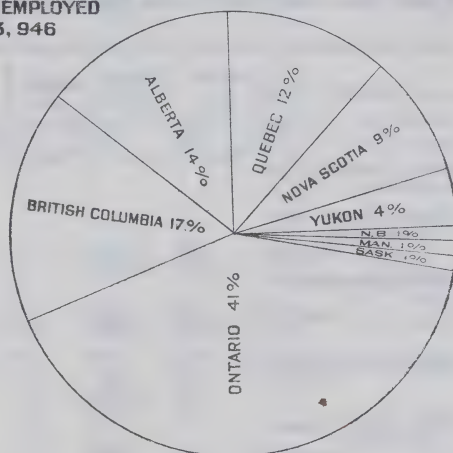


Table 225.—Fuel Used in the Mineral Industry in Canada, by Provinces, 1924

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia and Yukon	Canada
Anthracite Coal....Tons			11,388	5,969	300			912	18,569
\$			90,458	52,757	1,687			9,220	154,122
Bituminous Coal...Tons	527,812	9,059	279,021	577,431	18,049	2,760	97,288	276,635	1,788,055
\$	2,003,089	54,424	1,585,423	3,516,487	135,649	26,273	399,483	1,284,325	9,005,153
Lignite Coal.....Tons					524	26,209	132,764		159,497
\$					3,205	32,031	172,500		207,736
Coke.....Tons			2,256	189,445	438			35,631	227,770
\$			20,360	1,889,609	7,191			526,898	2,444,058
Gasoline.....Imp. gal.	39,577	772	65,233	103,208	813	160	3,772	95,431	308,966
\$	10,638	326	18,255	28,417	388	61	2,442	65,063	125,590
Fuel oil.....Imp. gal.	41,120	1,005	103,382	3,989,052		23,062	1,620	3,903,989	8,063,230
\$	3,842	188	12,973	413,787		2,725	65	263,635	697,215
Wood.....Cord	2,175	6,692	30,034	84,337	13,528	655	1,670	18,511	157,602
\$	9,157	33,694	148,844	466,048	69,655	3,580	8,064	111,463	850,505
Artificial and natural gas.....M cu. ft.		3,646		250,375			296,494	266,866	817,381
\$		1,480		10,332			10,544	40,504	62,560
Other fuels.....\$				6,415				485	6,900
<b>Total.....\$</b>	<b>2,026,726</b>	<b>90,112</b>	<b>1,876,313</b>	<b>6,383,852</b>	<b>217,775</b>	<b>64,670</b>	<b>593,098</b>	<b>2,301,593</b>	<b>13,554,139</b>

Table 226.—Fuel Used in the Mineral Industry in Canada, by Kinds and by Industries, 1924

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Total value
	Tons	Tons	Tons	Tons	Gal.	M cu. ft.	Cords	\$	\$
<b>METALLIC MINERAL INDUSTRY—</b>									
Auriferous Quartz Mining and Milling—									
Quantity	986	19,536		587	989,952		20,671		
\$	16,494	200,344		8,431	113,007		104,383	619	443,278
Copper-Gold-Silver Mining—									
Quantity	192	6,946		4	577,958		80		
\$	3,359	68,356		89	32,904		480		105,188
Nickel-Copper Mining—									
Quantity	5	8,152		119	37,418		93		
\$	81	56,526		1,331	4,462		613		63,613
Silver Cobalt Mining and Milling—									
Quantity	700	6,025		77	187,145		6,716		
\$	11,230	68,855		1,358	33,524		39,516		154,483
Silver-Lead-Zinc Mining and Milling—									
Quantity	647	15,920		432	267,770		5,293		
\$	5,323	107,851		3,375	77,029		55,838		249,416
*Metallurgical Works—									
Quantity	149	138,631		216,677	5,908,047	266,699	6,367		
\$	2,452	919,289		2,336,294	478,780	40,277	46,997		3,824,089
<b>Total.....Quantity</b>	<b>2,679</b>	<b>195,210</b>		<b>217,896</b>	<b>7,968,290</b>	<b>266,699</b>	<b>39,220</b>		
<b>\$</b>	<b>38,939</b>	<b>1,421,221</b>		<b>2,350,878</b>	<b>739,706</b>	<b>40,277</b>	<b>247,827</b>	<b>619</b>	<b>4,839,467</b>

\*Figures for fuel used in molybdenum included with metallurgical works.

Table 226.—Fuel Used in the Mineral Industry in Canada, by Kinds and by Industries, 1924—Concluded

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Total value
	Tons	Tons	Tons	Tons	Gals.	M cu. ft.	Cords	\$	\$
<b>NON-METALLIC MINERAL INDUSTRIES—</b>									
Asbestos—									
Quantity	10,334	34,862		1,676	1,473				
\$	80,502	195,142		17,415	474				293,533
Coal Mining—									
Quantity		765,212	154,800						
\$		2,787,778	185,087						2,972,865
Feldspar—									
Quantity		846			400		2,185		
\$		6,982			179		9,705		16,866
Graphite—									
Quantity		250			5,000		1,918		
\$		2,500			450		6,713		9,663
Grindstones—									
Quantity		553			1,115		191		
\$		4,553			251		456		5,260
Gypsum—									
Quantity		14,689	281	690	72,794	4,863	872		
\$		114,040	1,293	8,883	12,838	2,090	2,674		141,818
Iron Oxides—									
Quantity		438			1,860		2,120		
\$		3,506			560		9,969		14,035
Mica—									
Quantity	4	224			1,200		664		
\$	67	1,824			300		3,341		5,532
Quartz—									
Quantity		4,187			13,899		305		
\$		29,256			2,505		1,880		33,641
Salt—									
Quantity		63,555			4,832		310		
\$		316,123			996		1,540	6,241	324,900
Talc—									
Quantity		161			6,250		100		
\$		1,175			2,125		350		3,650
Miscellaneous Non-Metallc Mineral Industries—									
Quantity		901			17,073		1,283		
\$	12	7,474			1,762		3,677		12,925
<b>Total.... Quantity</b>	<b>10,339</b>	<b>885,878</b>	<b>155,081</b>	<b>2,366</b>	<b>125,896</b>	<b>4,863</b>	<b>9,948</b>		
<b>\$</b>	<b>80,581</b>	<b>3,470,353</b>	<b>186,380</b>	<b>26,298</b>	<b>22,440</b>	<b>2,099</b>	<b>40,305</b>	<b>6,241</b>	<b>3,834,688</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS INDUSTRIES—</b>									
Cement—									
Quantity	12	432,821			18,374	565	264		
\$	300	2,237,220			5,263	559	1,915		2,245,257
Clay Products—									
Quantity	2,403	190,888	2,683	1,807	194,532	534,471	46,156		
\$	13,616	1,352,903	13,963	12,186	26,025	14,158	249,274	40	1,682,165
Lime Burning—									
Quantity	1,744	52,061	79	5,697	3,917	10,783	59,719		
\$	8,330	323,034	825	54,645	713	5,776	302,846		696,169
Sand and Gravel—									
Quantity	110	15,146	1,644	2	36,122				
\$	654	93,605	6,481	21	7,715				108,476
Stone Quarrying—									
Quantity	1,282	16,051	10	2	85,065		2,295		
\$	11,702	106,817	87	30	20,943		8,338		147,917
<b>Total.... Quantity</b>	<b>5,551</b>	<b>706,967</b>	<b>4,416</b>	<b>7,508</b>	<b>338,010</b>	<b>545,819</b>	<b>108,434</b>		
<b>\$</b>	<b>34,602</b>	<b>4,113,579</b>	<b>21,356</b>	<b>66,882</b>	<b>69,659</b>	<b>20,493</b>	<b>562,373</b>	<b>40</b>	<b>4,879,984</b>
<b>Grand Total—</b>									
Quantity	18,569	1,788,055	159,497	227,770	8,432,196	817,381	157,602		
\$	154,122	9,095,153	207,736	2,444,058	822,805	62,860	850,505	6,909	13,554,139

Table 227.—Power Used in the Mineral Industry in Canada by Provinces, 1924

Provinces		Stationary Engines			Hydraulic Turbines	Electric Motors		Boilers
		Steam	Gas	Oil		Operated by power generated by own establishment	Operated by purchased power	
Nova Scotia.....	No.	458		27	5	397	73	215
	H.P.	72,485		841	710	32,528	2,620	45,477
New Brunswick.....	No.	43	16	8		9	2	33
	H.P.	1,812	249	109		235	90	2,022
Quebec.....	No.	70	6	37	2	40	1,010	105
	H.P.	5,199	51	647	690	3,375	57,195	6,276
Ontario.....	No.	201	163	72	16	210	2,402	260
	H.P.	25,287	2,367	3,145	2,655	7,956	116,549	27,994
Manitoba.....	No.	28	2	3		1	148	16
	H.P.	1,155	4	13		7	7,505	665
Saskatchewan.....	No.	43	2	19		41	5	22
	H.P.	2,631	11	251		691	45	2,440
Alberta.....	No.	325	12	65		287	403	247
	H.P.	38,189	193	485		7,957	17,240	31,680
British Columbia.....	No.	166	3	28	65	1,218	887	159
	H.P.	33,638	58	1,795	40,003	42,647	53,014	23,027
Yukon.....	No.	2		5		15	3	3
	H.P.	115		475		264		235
Canada.....	No.	1,426	205	254	88	2,198	4,930	1,069
	H.P.	180,511	2,938	7,761	44,058	95,660	251,258	139,346

Table 228.—Cost of Electric Power Used in the Mineral Industry in Canada, by Industries and by Provinces, 1924

Industry	Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba and Saskatchewan	Alberta	British Columbia and Yukon	Canada
	\$	\$	\$	\$	\$	\$	\$
<b>METALLIC—</b>							
Auriferous Quartz.....			1,033,652			82,476	1,116,128
Silver-Cobalt-Nickel.....			314,168				314,168
Silver-Lead-Zinc.....		13,000	11,260			200,667	224,927
Copper Gold.....		31,322				229,643	260,965
Placer Mining.....							
Nickel-Copper.....			87,447				87,447
Metallurgical Works.....			284,898			660,506	945,404
<b>Total.....</b>		<b>44,322</b>	<b>1,731,425</b>			<b>1,173,292</b>	<b>2,949,639</b>
<b>NON-METALLIC—</b>							
Asbestos.....		466,513					466,513
Coal.....	768,143			958	295,707	321,314	1,386,122
Feldspar.....			2,500				2,500
Graphite.....							
Grindstone.....							
Gypsum.....	5,636		28,475	5,074			39,185
Iron Oxides.....		2,780					2,780
Mica.....							
Quartz.....			640				640
Salt.....			17,218				17,218
Talc.....			14,701				14,701
Natural Gas.....			2,250				2,250
Petroleum.....			18,656				18,656
Other Non-Metallie.....			2,023				2,023
<b>Total.....</b>	<b>773,779</b>	<b>469,293</b>	<b>86,463</b>	<b>6,032</b>	<b>295,707</b>	<b>321,314</b>	<b>1,952,588</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>							
Cement.....		212,271	212,529	28,775	100,649	73,230	627,454
Clay Products.....	361	71,064	114,549	1,346	1,286	8,323	196,929
Lime.....	106	13,706	36,073	824			44,709
Sand and Gravel.....		250	19,700	552		5,400	25,902
Stone.....	2,461	113,544	100,883	13,917		5,078	235,883
<b>Total.....</b>	<b>2,928</b>	<b>410,835</b>	<b>477,734</b>	<b>45,414</b>	<b>101,935</b>	<b>92,031</b>	<b>1,130,877</b>
<b>Grand Total.....</b>	<b>776,707</b>	<b>924,450</b>	<b>2,295,622</b>	<b>51,446</b>	<b>397,642</b>	<b>1,586,637</b>	<b>6,032,504</b>

Table 229.—Machinery Installed and Operated in the Mineral Industry in Canada, 1924

		Boilers installed	Stationary engines, including those used for hoisting, pumping, etc.			Hydraulic turbines or water- wheels	Electric motors	
			Steam	Gas	Oil		Operated by power generated by esta- blishment	Operated by purchased power
<b>METALLIC—</b>								
Auriferous Quartz.....	No.	73	55	6	27	16	131	511
	H.P.	5,206	3,737	730	2,950	4,665	4,867	29,734
Silver-Cobalt-Nickel.....	No.	24	22		2		13	177
	H.P.	1,510	888		400		475	6,657
Silver-Lead-Zinc.....	No.	20	9	2	8	15	26	269
	H.P.	1,987	1,075	52	765	2,284	571	9,734
Copper-Gold-Silver.....	No.	12	2		4	15	175	71
	H.P.	1,268	1,060		127	10,900	8,525	3,842
Placer Gold.....	No.							
	H.P.							
Nickel-Copper.....	No.	3	3					143
	H.P.	1,500	1,300					13,715
Molybdenum.....	No.	7	2		1			
	H.P.	403	175		6			
Iron Blast Furnaces.....	No.							
	H.P.							
Metallurgical Works.....	No.	43	36			12	671	1,190
	H.P.	13,205	20,597			12,000	13,000	71,139
<b>Total.....</b>	<b>No.</b>	<b>182</b>	<b>129</b>	<b>8</b>	<b>42</b>	<b>58</b>	<b>1,016</b>	<b>2,361</b>
	<b>H.P.</b>	<b>25,079</b>	<b>28,832</b>	<b>782</b>	<b>4,248</b>	<b>29,849</b>	<b>27,438</b>	<b>134,821</b>
<b>NON-METALLIC—</b>								
Asbestos.....	No.	27	12		2		29	386
	H.P.	1,855	2,350		10		3,000	24,504
Coal.....	No.	513	887	10	59	6	788	345
	H.P.	85,741	126,472	78	447	12,000	51,462	14,947
Feldspar.....	No.	13	8					
	H.P.	462	322					
Graphite.....	No.	2	3			2	10	
	H.P.	160	225			200	399	
Gypsum.....	No.	11	27	2	24		35	68
	H.P.	1,230	1,983	105	742		602	3,669
Grindstones.....	No.	6	7		3			
	H.P.	275	255		46			
Mica.....	No.	2	3			1	4	
	H.P.	68	170			140	105	
Natural Gas.....	No.	18	14	123	13		19	7
	H.P.	677	440	943	86		221	64
Oxides, Iron.....	No.				2			3
	H.P.				40			77
Petroleum.....	No.	4	2	16	4			46
	H.P.	180	58	160	18			420
Quartz.....	No.	7	14		4		6	1
	H.P.	800	772		73		120	200
Salt.....	No.	25	30		4		4	43
	H.P.	4,100	674		71		127	549
Talc.....	No.	2			5		4	9
	H.P.	120			25		225	320
Other Non-Metallics.....	No.	7	5	1	6		24	4
	H.P.	642	395	5	97		229	300
<b>Total.....</b>	<b>No.</b>	<b>637</b>	<b>1,012</b>	<b>152</b>	<b>126</b>	<b>9</b>	<b>923</b>	<b>912</b>
	<b>H.P.</b>	<b>96,316</b>	<b>134,116</b>	<b>1,291</b>	<b>1,655</b>	<b>12,340</b>	<b>56,490</b>	<b>45,050</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>								
Cement.....	No.	16	5		12	6	218	722
	H.P.	2,577	1,877		296	700	10,123	41,407
Clay Products.....	No.	107	117	15	19	1	26	314
	H.P.	9,103	8,403	415	373	150	922	13,066
Lime.....	No.	21	24	3	6	1	5	125
	H.P.	932	1,119	34	81	30	112	2,372
Sand and Gravel.....	No.	35	46	10	16	5	7	89
	H.P.	2,471	2,594	101	320	239	485	2,216
Stone.....	No.	62	93	17	33	8	3	407
	H.P.	3,374	3,570	315	788	750	90	15,326
<b>Total.....</b>	<b>No.</b>	<b>241</b>	<b>285</b>	<b>45</b>	<b>86</b>	<b>21</b>	<b>259</b>	<b>1,657</b>
	<b>H.P.</b>	<b>18,457</b>	<b>17,563</b>	<b>865</b>	<b>1,858</b>	<b>1,869</b>	<b>11,732</b>	<b>74,387</b>

## UNITED STATES TARIFF RATES ON MINERAL PRODUCTS IMPORTED

Since Canadian producers of mineral products market a large part of their annual output in the United States it was thought it might be of value to readers of this report to have at hand a guide to United States Tariff and the following tables were therefore compiled. These have been checked by the United States Trade Commissioner at Ottawa.

Table 230—United States Tariff

Item Number	Material	Duty
<b>(a) On Metals and Manufactures of</b>		
1508	Antimony ore.....	Free
1547	Chromite—Chromite or chrome ore.....	Free
1550	Cobalt metal and ore.....	Free
29	Cobalt linoleate.....	10c. per lb.
29	Cobalt, oxide of.....	20c. per lb.
29	Cobalt salts and compounds (all other).....	30% ad val.
29	Cobalt sulphate.....	10c. per lb.
1457	Cobalt ore waste.....	10% ad val.
1556	Copper ore, regulus of, and black or coarse copper, and cement copper, old copper, fit only for manufacture, copper scale, clippings from new copper, and copper in plates, bars, ingots, or pigs not manufactured or specially provided for.....	Free.
1557	Copper sulphate or blue vitriol, copper acetate and subacetate.....	Free.
381	Copper in rolls, rods or sheets.....	2½ c. per lb.
	Engravers plates, not ground and seamless copper tubes and tubing.....	7 c. per lb.
	Engravers plates, ground, and brazed copper tubes.....	11c. per lb.
	Brass rods, sheet brass, brass plates, bars, and strips, Muntz yellow metal sheets, metal sheathing, bolts, piston rods and shafting.....	4 c. per lb.
	Seamless brass tubes.....	8c. per lb.
	Brazed brass tubes, angles and channels.....	12c. per lb.
	Bronze rods and sheets.....	8c. per lb.
1539	Bullion tubes.....	Free.
1634	Bullion gold or silver.....	Free.
1597	Gold ores and sweepings.....	Free.
1677	Iron ore including manganoferous iron ore and residuum from burnt pyrites.....	Free.
	Sulphur in any form, and sulphur ore, and spent oxide of iron containing more than 25 per centum of sulphur.....	Free.
392	Lead bearing ores and mattes—duty applied on lead contents, such duty shall not be applied to the lead contained in copper mattes unless actually recovered.....	1½c. per lb.
393	Lead bullion or base bullion, lead in pigs and bars, dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, type metal, Babbitt, solder and all other combinations not specially provided for, duty to apply on lead contents.....	2½c. per lb.
47	Lead in sheets, pipe, shot, glazier's lead and lead wire.....	8c. per lb.
74	Lead, linoleate of.....	30% ad val.
302	Lead litharge.....	2½c. per lb.
	Manganese ore or concentrates containing in excess of 30 per centum of metallic manganese.....	1c. per lb. on metallic manganese content.
302	Molybdenum ore or concentrates.....	35c. per lb. on metallic molybdenum content.
302	Tungsten ore or concentrates.....	45c. per lb. on metallic tungsten content.
1634	Nickel mattes and ores of nickel.....	Free.
390	Nickel oxide.....	1c. per lb.
390	Nickel and nickel alloys in pigs, ingots, shot, cubes and similar forms.....	3c. per lb.
390	Nickel in bars, rods, sheets, strips, tubing, etc.....	25% ad val.
390	In addition thereto on the foregoing if cold rolled, drawn or worked.....	10% ad val.
1596	Platinum, palladium and other metals of the platinum group.....	Free
394	Zinc-bearing ore of all kinds containing less than 10 per centum of zinc.....	Free.
	Containing more than 10 per centum of zinc and less than 20 per centum.....	½c. per lb. on metallic zinc content.
	Containing more than 20 per centum of zinc and less than 25 per centum.....	1c. per lb. on metallic zinc content.
	Containing 25 per centum of zinc or over.....	1½c. per lb. on metallic zinc content.
395	Zinc in blocks, pigs or slabs and zinc dust.....	1½c. per lb.
395	Zinc in sheets.....	2c. per lb.
395	Zinc scrap for re-manufacturing.....	1½c. per lb.
<b>(b) On Non-Metallic Minerals</b>		
1619	Actinolite—crude, classified as “minerals, crude, not specially provided for”.....	Free
214	Actinolite—ground, classified as “earthy or mineral substances, wholly or partly manufactured, not specially provided for”.....	30% ad val.
1513	Arsenic—white or arsenious acid.....	Free
1512	Arsenic—Sulphide of.....	Free.
379	Arsenic—Metallic.....	6c. per lb.
1515	Asbestos—crudes, fibres, sand.....	Free.
1401	Asbestos—yarn.....	30% ad val.
69	Barytes—ore, crude.....	\$4 per ton
69	Barytes—ore, ground.....	\$7.50 per ton.
	Calcite—not mentioned by this name in the tariff. Chalk, crude, is free (Item 1545) and chalk, ground, is dutiable at 25% ad valorem (Item 20). .....	
1570	Corundum—ore.....	Free

Table 230—United States Tariff—Concluded

Item Number	Material	Duty
1415	Corundum—ground.....	1c. per lb.
1619	Feldspar—crude, classified as "minerals, crude not specially provided for".....	Free
214	Feldspar—ground, dutiable as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
207	Fluorspar.....	\$5.60 per ton
213	Graphite or plumbago—crude or refined—Amorphous.....	10% ad val.
213	Graphite or plumbago—crude or refined—Crystalline lump, chip or dust.....	20% ad val.
213	Graphite or plumbago—crude or refined—Crystalline flake.....	1½c. per lb.
236	Grindstones—finished or unfinished.....	\$1.75 per ton
1643	Gypsum—crude.....	Free
205	Gypsum—ground.....	\$1.40 per ton
75	Iron oxides—others, crude.....	½c. per lb.
75	Iron oxides—others, washed or ground.....	½c. per lb.
75	Iron oxides—"iron-oxide pigments not specially provided for".....	20% ad val.
204	Magnesite—crude.....	5/16c. per lb.
204	Magnesite—caustic calcined.....	5/8c. per lb.
204	Magnesite—dead burned and grain.....	23/40c. per lb.
50	Magnesium sulphate—(Epsom salts).....	¾c. per lb.
208	Mica—unmanufactured, valued at not above 15 cents per pound.....	4c. per lb.
208	Mica—unmanufactured, valued above 15 cents per pound.....	25% ad val.
208	Mica—cut or trimmed, and mica splittings.....	30% ad val.
208	Mica—ground.....	20% ad val.
808	Mineral waters.....	10c. per gal.
1640	Phosphate—"phosphates, crude".....	Free
1677	Pyrites—"sulphur ore, such as pyrites or sulphuret of iron in its natural state, and spent oxide of iron, containing more than 25% of sulphur".....	Free
83	Salt—in bags, sacks, barrels, or other packages.....	11c. per cwt.
83	Salt—in bulk.....	7c. per cwt.
83	Sodium sulphate—crystallized or Glauber's salt.....	\$1.00 per ton
1667	Sodium—sulphate, crude or salt cake.....	Free
207	Silica—crude, not specially provided for.....	\$4 per ton
207	Silica—for use as pigment, not specially provided for.....	\$7.50 per ton
209	Talc—crude.....	4c. per lb.
209	Talc—ground, washed, powdered, or pulverized (except toilet preparations).....	25% ad val.
1675	Tripoli—crude or manufactured, not specially provided for.....	Free
<b>(c) On Structural Materials and Clay Products</b>		
<b>Clay Products—</b>		
201	Brick—bath, chrome and fire, n.s.p.f.....	25% ad val.
1536	Brick—not specially provided for.....	*Free
207	China clay or Kaolin.....	\$2.50 per ton
207	Clays or earths, unwrought or unmanufactured, including common blue clay and Gross-Almerode glass pot clay, n.s.p.f.....	\$1.00 per ton
207	Clays or earths, wrought or manufactured, n.s.p.f.....	\$2.00 per ton
210	Earthenware—common yellow, brown or gray made of natural, unwashed, and unmixed clay, plain or embossed; common salt-glazed stoneware; stoneware and earthenware crucibles; all the foregoing not ornamented, incised, or decorated in any manner.....	15% ad val.
210	Earthenware—ornamented, incised, or decorated in any manner and manufactures wholly or in chief value of such ware, n.s.p.f.....	20% ad val.
210	Earthenware—Rockingham.....	25% ad val.
203	Lime—not specially provided for, including weight of container.....	10c. per cwt.
203	Lime—hydrated, including weight of container.....	12c. per cwt.
237	Slates—slate chimney pieces, mantles, slabs for tables, roofing slates, and all other manufactures of slate, n.s.p.f.....	15% ad val.
<b>Stone—</b>		
203	Limestone—(not suitable for use as monumental or building stone) crude, or crushed but not pulverized.....	5c. per cwt.
235	Limestone, freestone, granite, sandstone, lava and all other stone suitable for use as monumental or building stone, except marble, breccia, and onyx, n.s.p.f., hewn, dressed, or polished, or otherwise manufactured.....	50% ad val.
235	Unmanufactured, or not dressed, hewn or polished.....	15c. per cubic ft.
232	Marble, breccia and onyx, in block, rough or squared only.....	65c. per cubic ft.
232	Marble, breccia and onyx, sawed or dressed, over two inches in thickness.....	\$1.00 per cubic ft.
232	Marble, breccia and onyx slabs and paving tiles, containing not less than four superficial inches, if not more than one inch in thickness.....	8c. per superficial foot.
	If more than one inch and not more than one and one-half inches in thickness.....	10c. per superficial foot.
	If more than one and one-half inches and not more than two inches in thickness.....	13c. per superficial foot.
	If rubbed in whole or in part.....	3c. per superficial foot in addition.
	Mosaic cubes of marble, breccia, or onyx, not exceeding two cubic inches in size, if loose.....	One-fourth of one cent per lb. and 20% ad val.
	If attached to paper or other material.....	5c. per superficial foot and 35% ad val.
1675	Stone and sand: Burrstone in blocks, rough or unmanufactured; quartzite; traprock; rottenstone; tripoli and sand, crude or unmanufactured; cliff stone; freestone; granite and sandstone; unmanufactured and not suitable for use as monumental or building stone; all of the foregoing not specially provided for.....	Free

\*Except on imports from countries which impose a duty on similar products imported from U.S. On imports of these commodities a corresponding duty is levied.

## METALLIC MINERAL INDUSTRIES.

## Alluvial Gold Mining Industry.

It is extremely difficult to prepare a complete report on placer mining in Canada, since the placer fields are mostly remote and except in a few cases, are operated by small numbers of men of no fixed abode. The dredging companies and hydraulic companies send annual returns to the Bureau and with the aid of the Mining Lands Branch of the Department of the Interior, some definite information is thus obtainable regarding the Yukon Territory.

It was not possible to secure complete returns from British Columbia operators and the tables below refer only to the Yukon. The figures of production for British Columbia are as published by the Department of Mines of that province; the total value of the output for the year amounted to \$420,750 which was slightly more than the sum reported in 1923. During 1924 the net values of the placer gold recovered from the Yukon totalled \$617,263, or about fifty per cent of the total for 1923. In the Yukon, 4 companies recovered 30,946 crude ounces or 82 per cent of the total quantity won, and employed 264 workers to whom wages amounting to \$389,079 were paid. The total amount of earth handled was 2,888,918 cubic yards, and some 122 miles of ditches were kept in operation and repair by these companies. There were also 84 prospectors or individual lessees who carried on work during the season, accounting for approximately 7,000 crude ounces of gold.

**Table 231.—Summary Statistics of Placer Mining in the Yukon Territory, 1923 and 1924**

Item	1923	1924
Time in operation.....months	6-8	6-8
Number of wage-earners.....	307	264
Wages paid.....	\$467,807	\$389,079
Crude ounces gold recovered.....	74,868	37,946
Value of gold and silver.....	\$1,226,705	\$617,263
Quicksilver purchased.....lb.	300	.....
Quantity of material handled.....cubic yards	8,600,160	2,888,918
Length of ditches.....miles	184	122

Since mining in the Yukon Territory is regulated by the Dominion Government, it is possible to include in this description the reports of the different mining recorders supplied through the courtesy of the Mining Lands Branch of the Department of the Interior. The principal operators and the creeks worked on were as shown in the next following table.

**Table 232.—Showing Location of Principal Operators in the Yukon Territory, 1924**

Name of Company	Claim Operated
New North West Corporation.....	900 placer claims.
Burrall and Baird, Ltd.....	78 placer claims, 3 leases.
Yukon Gold Company.....	340 placer claims, 3 leases.
Collins, Weinberg and Collins.....	Miller Creek Concession.
North American Transportation and Trading Co.....	Bonanza and Dominion Creek
38 prospectors.....	Bonanza Creek.
9 ".....	Thistle Creek.
12 ".....	Kirkman Creek.
20 ".....	Whitehorse District.
5 ".....	Gold Run.
89 Total	

**REPORT OF THE GOLD COMMISSIONER, DAWSON, YUKON TERRITORY, REGARDING MINING, YEAR ENDING MARCH 31, 1925.**

*Placer Gold Mining*—The amount of placer gold mined during the year on which royalty export tax was paid was 41,697.33 ounces, which is not as much as last year, but owing to the early fall, final clean-ups were not made on many of the hydraulic properties.

*Yukon Gold Company*—This company operated eight hydraulic mines at the following points; Adams Hill, King Solomon, Oro Fino Hill, Trail Gulch, Lovett Right Limit and Gold Hill, and

a total of 1,664,560 cubic yards of material were handled using 439,685 miner's inches of water. The daily averages of men employed during the mining season (April to October) was as follows: hydraulic mines, 41; ditches, 25; otherwise employed, 23; total, 89.

*Burrall and Baird, Limited*—This company operated Dredge Canadian No. 2 in the Klondike valley on Hydraulic Mining Lease No. 18. This dredge commenced operations on May 13th, about three miles below Bear Creek Camp, and was shut down on November 27th, having dredged 1,614,646 cubic yards of gravel and bedrock during the season.

In the section dredged by this dredge 45,430 square yards of material were thawed by water. Sixty holes totalling 1,480 lineal feet, spaced seventy-five feet apart, were sunk with a Keystone drill. In these, pipes were placed and water pumped through at a pressure of fifteen pounds. This resulted in a perfect thaw.

On May 9th the Hunker Pumping Plant, operated by this company, commenced delivering water to a bench 600 feet above the level of the creek. This was used by Mr. M. H. Jones in hydraulicizing the gravels on some bench claims on Last Chance Creek. Pumping operations were closed down on September 15th.

In addition to these field operations, a considerable force of men were employed in the electric repair shop, welding shop, warehouse, mess, and stables at the headquarters of the Company at Bear Creek. An average of 50 men were employed throughout the season.

*The New North West Corporation, Limited*—This company and its subsidiaries are the holders of 902 placer mining claims. Two dredges were operated by the company. The North West No. 1 commenced the season on Creek Claim No. 5 below Lower Discovery on Dominion Creek, and dredged upstream approximately 2,100 feet. This dredge was in operation from May 19th to October 28th, and dredged 497,076 cubic yards of material. Dredge No. 2 commenced the season on Creek Claim No. 236 below Lower Discovery Dominion, was in operation from May 19th, and dredged 550,740 cubic yards of material.

Sixty-two per cent of the ground dredged by No. 1 was frozen, and was thawed by artificial methods. All the gravels dredged by No. 2 were frozen and thawed by the water process. The ditches constructed under water Grants Nos. 9024 and 9025 were maintained in a high state of efficiency and furnished water for thawing. Prospecting in advance of Dredge No. 1 was carried on by means of a Keystone drill.

This company operated the hydro-electric power plant at the North Fork of the Klondike River, and furnished an adequate supply of power for the operation of their own dredges, the dredges and machine shops of Burrall and Baird, Limited, the pumping plant at Hunker Creek, and the Dawson Electric Light and Power Company, Limited, for lighting the City of Dawson. An average of 110 men were employed by this company from May 1st to October 31st.

*Other Placer Operations*—In addition to what may be termed the large scale operations referred to, many individuals, and miners working in partnership, were engaged in placer mining throughout the various parts of the district. The early fall interfered seriously with the hydraulic operations.

*Lode Mining*—Dawson District. There have been no new developments in this district during the year. A large number of claims are being held in the Conglomerate area on Indian River, and also in the Twelve-Mile area, but no work other than the annual assessment is being performed at the present time.

Application has been made for Crown grants of four claims on Williams Creek, and a number of claims in various parts of the District are being kept up, but there is no development work of importance.

*Mayo District*—This district appears to be most promising, and a larger amount of prospecting and development work has been done this year than last. Applications have been made for leases of a number of claims, some of which have already been granted. Many new veins of both high grade silver and milling ore have been uncovered on Keno and Galena Hills.

In the new Beaver River area about sixty miles north of Keno, important veins of rather low grade ore have been discovered. Unfortunately, the distance and cost of transportation do not at present permit shipping from this area.

On Keno-Hill, the Treadwell Yukon Company, Limited, are the most extensive operators. Their drainage tunnel about 3,000 feet long on the northwest side of the hill was completed last spring, and tapped the vein below their main shaft. A complete concentrate mill was erected

during the summer and is now working to full capacity, and is expected to be duplicated in the near future. This mill is a boon to the smaller operators who are thus enabled to dispose of their ore without awaiting returns from an outside smelter.

The most important development on Keno Hill during the year was the discovery of a large body of high grade ore at the 400 foot level in the Treadwell Yukon Company's mine. This together with the older levels at 100, 200 and 300 feet are being extensively mined; an average of 100 men are employed.

The Keno Hill, Limited, discontinued work on their "Sadie" Claim, and leased it together with their power plant and waterfront lease to the Treadwell Yukon Company, Limited, who will continue development as soon as drainage is complete. There is a large tonnage of milling grade ore on this property.

The original Keno Hill, Limited, group of claims on the top of Keno Hill was leased in September last to Pickering and Britton, who have mined about four hundred tons of high grade ore, employing an average of about ten men.

There are in addition a number of other individual miners working on this hill, and a considerable tonnage of both high grade and milling ore is being taken out.

Development work on Galena Hill has also resulted in the discovery and mining of high grade silver ore on several claims.

*Coal.*—The Five Fingers Coal Company operated their mine at Tantalus Butte, mining 1,100 tons of coal. Of this amount 500 tons were shipped to Dawson.

### The Auriferous Quartz Mining Industry.

The auriferous quartz mining industry in Canada is in a very flourishing condition at the present time. For several years there has been a continued improvement in development and production.

Auriferous quartz mines include those producing an ore, which carries as its main constituent of value, gold that may be recovered by amalgamation or cyanidation.

Until the discovery of the Porcupine and Kirkland Lake fields, a few years ago, Canadian gold production was mostly obtained in the form of placer; the Yukon and the Cariboo section of British Columbia were the main sources. Production from these alluvial deposits has gradually shown a downward trend in recent years, but on the other hand, the growth in lode gold production has been remarkable.

Ontario with its rich mines in the Porcupine and Kirkland Lake districts, leads all the provinces in gold production. All producing mines in these districts operate their own mills. Ores are finely ground and are then cyanided. Amalgamation and cyanidation are both used at two of the properties.

British Columbia is next in importance to Ontario as a producer of gold. The Premier Mine which is situated at Premier, B.C., close to the Alaska boundary is one of the greatest mines in the province, producing gold, silver and a small amount of lead.

The Nickel Plate mine at Hedley on the Similkameen River has also been a producer for some years. The ore of this mine is arseno-pyrite.

Production of gold in Nova Scotia has fluctuated considerably over a period of years. The arsenic content of the ores aid materially in making economic production possible but prices of arsenic vary considerably and cannot therefore be relied upon to be a sure source of revenue.

To date Quebec has no producing gold mines, but during the last two years much activity has been shown in the Rouyn district which is really an extension of the mineralized zone of northern Ontario. The ore in this section of Quebec contains copper as well as gold; it is expected that a smelter will shortly be built in this area.

Northern Manitoba has also been the scene of considerable gold-mining activity during the last few years. Lack of transportation has retarded development, but when this factor is overcome Manitoba will likely take its place among the gold-producing provinces of the Dominion.

During 1924 there were 70 auriferous quartz mines operating in Canada and of these 28 produced bullion or shipped ores while 42 carried on development work only. There were 41 mines operating in Ontario; 11 in British Columbia; 6 in Nova Scotia; 2 in Manitoba and 10 in Quebec. The corresponding data for 1923 were, Ontario 41, British Columbia 11, Nova Scotia 10 and Manitoba 3. The mines of Ontario produced over 98 per cent of the gold derived from this group. In 1924 there were 3,096,290 tons of ore mined of which 3,089,869 tons was put through

the mills and 2,967,156 tons was cyanided. There were 144,086 crude ounces recovered by amalgamation and 1,460,295 crude ounces recovered by cyanidation. Shipments amounted to 1,605,425 crude ounces, containing 1,253,262 fine ounces of gold and 209,383 fine ounces of silver. The total net value of these shipments was \$26,046,169. Ores and residues and high-grade slags shipped to smelters were valued at \$5,053,938. The greater part of the gold was sold in New York, the exchange premium amounting to \$198,000 as compared with \$286,458 in 1923. As the year went on, the exchange neared par and thus cut off a source of revenue that had been of much assistance to gold-mining companies who were in the initial stages of production.

The total capital employed in this industry in Canada in 1924 amounted to \$83,982,765, as against \$77,574,976 in the previous year. Of this total, approximately \$69,000,000 was invested in Ontario, a little over \$3,000,000 in Manitoba and about \$10,500,000 in British Columbia. Nearly 1.5 million dollars was reported as invested in the new gold-mining district of Quebec, and there was also a small amount reported as invested in Nova Scotia gold mines.

Salaries and wages paid in 1924 amounted to about 10.5 million dollars as against 8.9 million dollars for 1923. Employees in the operating mines numbered 6,738 of whom 459 were on salary, 2,050 were wage-earners working on the surface, 3,682 underground, and 547 in the concentrators. Of this total number employed, 5,785 were working in the Ontario gold mines, 542 in British Columbia, 258 in Quebec, 93 in Manitoba and 60 in Nova Scotia.

The gold production in 1924 was the greatest of any year on record. During the war, because the value of an ounce of gold is fixed, and because the value of everything necessary to the production of gold showed an increase, many companies found themselves either operating at a loss or with a very small margin of profit. After hostilities ceased, costs of materials went down, labour costs were reduced and the supply of labour became more stable; gold mining then took on a new lease of life and many mines which had lain dormant for a considerable period were again re-opened, with the result that the gold-mining industry in Canada has grown rapidly.

The following figures emphasize the increasing importance of Canada's position as a gold producer, as compared with South Africa, the world's greatest producer.

**Table 233.—Comparative Figures of Gold Production, for the World, South Africa and Canada, 1915, 1921-1924**

Year	*World's output	*South Africa's output	Canada's output
	fine ounces	fine ounces	fine ounces
1915.....	22,593,833	10,538,588	918,056
1921.....	15,983,772	9,044,595	926,329
1922.....	15,444,830	8,009,069	1,263,364
1923.....	17,786,472	10,155,025	1,233,341
1924.....	18,574,098	10,584,434	1,525,382

\* Source—*Year Book of the American Bureau of Metal Statistics.*

**Table 234.—Capital Employed in the Auriferous Quartz Mining Industry in Canada, 1923 and 1924**

	Nova Scotia		Quebec		Ontario		Manitoba		British Columbia		Canada	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1923												
Producing.....	8	634,000	.....	.....	18	51,955,910	1	.....	6	9,104,820	33	61,694,730
Operating but not producing.....	2	50,500	.....	.....	23	15,428,306	2	.....	5	181,236	32	15,660,042
<b>Total.....</b>	<b>10</b>	<b>684,500</b>	.....	.....	<b>41</b>	<b>67,384,216</b>	<b>3</b>	<b>(b) 220,204</b>	<b>11</b>	<b>9,286,056</b>	<b>65</b>	<b>(a) 77,574,976</b>
1924												
Producing.....	3	70,000	.....	.....	15	53,833,245	1	124,069	9	10,336,029	28	64,363,343
Operating but not producing.....	3	46,293	10	1,335,748	26	14,860,973	1	3,294,296	2	82,112	42	19,619,422
<b>Total.....</b>	<b>6</b>	<b>116,293</b>	<b>10</b>	<b>1,335,748</b>	<b>41</b>	<b>68,694,218</b>	<b>2</b>	<b>3,418,365</b>	<b>11</b>	<b>10,418,141</b>	<b>70</b>	<b>83,982,765</b>

(a) Includes \$220,204 for Manitoba.

(b) Exclusive of property values in 1923.

Table 235.—Ores Mined and Milled, Crude Bullion Produced and Shipped from the Gold Mines in Canada, 1923 and 1924

	Nova Scotia	Ontario	Manitoba	British Columbia	Canada
<b>1923</b>					
Number of producing mines.....	8	18	1	6	33
Ore mined..... tons	1,090	2,287,438		190,384	2,478,912
Ore milled..... tons	228	2,267,289		102,159	2,369,672
Bullion recovered by amalgamation..... crude oz.	504	147,626	30	145	148,305
Ores cyanided..... tons		1,853,202		94,711	1,947,913
Bullion recovered by cyanidation..... crude oz.		1,066,108		10,918	1,077,026
Bullion shipped..... crude oz.	544	1,214,964	30	11,690	1,227,228
Contents of bullion shipped—Gold..... fine oz.	489	969,743	23	11,036	981,291
Silver..... fine oz.	25	151,535	4	650	152,214
Net value..... \$	10,583	20,143,938	478	228,550	20,383,549
Net value of ores, slags and residues sold..... \$	2,000	22,403		4,327,427	4,351,830
Amount of exchange premium..... \$		280,119		6,339	286,458
<b>Total net receipts..... \$</b>	<b>12,583</b>	<b>20,446,460</b>	<b>478</b>	<b>4,562,316</b>	<b>25,021,837</b>
<b>1924</b>					
Number of producing mines.....	3	15	1	9	28
Ore mined..... tons		2,884,519	2,669	209,102	3,096,290
Ore milled..... tons		2,875,760	2,669	211,440	3,089,869
Bullion recovered by amalgamation..... crude oz.		142,715	1,321	50	144,086
Ores cyanided..... tons		2,867,646		99,510	2,967,156
Bullion recovered by cyanidation..... crude oz.		1,436,992		23,303	1,460,295
Bullion shipped..... crude oz.	681	1,579,987	1,398	23,359	1,605,425
Contents of bullion shipped—Gold..... fine oz.	595	1,236,126 (b)	1,180	15,361	1,253,262
Silver..... fine oz.	44	208,454	143	742	209,383
Net value..... \$	12,346	25,692,570	24,490	316,763	26,046,169
(a) Net value of ores, slags and residues sold..... \$	24,587	32,756		4,996,595	5,053,938
Amount of exchange premium..... \$		196,748		1,252	198,000
<b>Total net receipts..... \$</b>	<b>36,933</b>	<b>25,922,074</b>	<b>24,490</b>	<b>5,314,610</b>	<b>31,298,107</b>

(a) Includes \$19,768 value of arsenic produced in B.C.

(b) Includes 49 oz. received by the Royal Mint from individuals.

Table 236.—Ores, Concentrates and Slags Shipped from the Gold Mines in Canada, 1923 and 1924

Item	Ontario and Nova Scotia mines shipping		British Columbia mines shipping		Canada
	To Canadian smelters	To Foreign smelters	To Canadian smelters	To American smelters	
<b>1923</b>					
Number of mines.....	3	2	4	3	(a) 11
Tons of ore, etc., shipped.....	224	105	35,066	61,703	96,896
Metal content—					
Gold..... oz.	115	1,045	24,838	99,554	125,552
Silver..... ".....		7,829	684,427	2,077,102	2,769,359
Copper..... lb.		45,000		121	45,121
Net value..... \$	1,165	23,238	1,300,090	3,027,337	4,351,830
<b>1924</b>					
Number of mines.....	1	3	6	3 (a)	13
Tons of ore, etc., shipped.....	39	1,145	21,449	86,719	109,394
Metal content—					
Gold..... oz.	107	1,820	17,250	129,326	148,503
Silver..... oz.	107	6,288	429,290	2,604,538	3,040,223
Copper..... lb.		1,232	432		1,664
Lead..... lb.		1,250	334	452,010	453,594
Arsenic..... lb.		381,092		495,250	876,342
Net value..... \$	1,837	55,506	619,094	4,377,501	5,053,938

(a) During 1923 one company and in 1924 two companies in British Columbia shipped to both American and Canadian smelters.

**Table 237.—Employees, Salaries and Wages in the Auriferous Quartz Mining Industry in Canada by Provinces, 1923 and 1924**

Province	1923					1924						
	Number of employees				Salaries and wages	Number of employees				Salaries and wages		
	On salary	Wage-earners		Total employees		On salary	Wage-earners		Total employees			
		Surface	Underground				Mill	Surface			Underground	Mill
					\$					\$		
Nova Scotia.....	6	15	13	2	36	25,091	6	31	21	2	60	32,660
Quebec.....							27	179	52		258	334,728
Ontario.....	362	1,231	2,901	425	4,919	7,841,227	360	1,574	3,381	470	5,785	9,040,272
Manitoba.....	7	10	24		41	58,824	11	57	20	5	93	136,605
British Columbia.....	63	180	226	59	528	1,036,292	55	209	208	70	542	955,875
Canada.....	438	1,436	3,164	486	5,524	8,961,434	459	2,050	3,682	547	6,738	10,500,140

**Table 238.—Number of Wage-Earners in the Auriferous Quartz Mining Industry in Canada by Months, 1923 and 1924**

Month	1923				1924			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Underground			Surface	Underground		
January.....	1,236	3,001	475	4,712	1,610	3,425	524	5,559
February.....	1,226	2,956	436	4,618	1,845	3,466	518	5,829
March.....	1,220	2,838	407	4,465	1,829	3,487	499	5,815
April.....	1,240	2,784	387	4,411	1,915	3,438	522	5,875
May.....	1,376	3,051	453	4,880	1,975	3,515	528	6,018
June.....	1,525	3,238	477	5,240	2,100	3,522	522	6,144
July.....	1,553	3,286	512	5,351	2,057	3,676	510	6,243
August.....	1,507	3,361	503	5,371	2,170	3,728	527	6,425
September.....	1,539	3,300	523	5,362	2,218	3,742	525	6,485
October.....	1,639	3,374	554	5,567	2,195	3,819	548	6,562
November.....	1,636	3,411	547	5,594	2,048	3,741	563	6,352
December.....	1,531	3,371	553	5,455	1,834	3,626	547	6,007
<b>Average.....</b>	<b>1,436</b>	<b>3,164</b>	<b>486</b>	<b>5,086</b>	<b>2,050</b>	<b>3,682</b>	<b>547</b>	<b>6,279</b>

**Table 239.—Miscellaneous Expenses in the Gold Mining Industry in Canada, by Provinces, 1923 and 1924**

Province	1923	1924
	\$	\$
Nova Scotia.....	13,469	5,028
Quebec.....		27,280
Ontario.....	5,427,717	5,999,980
Manitoba.....	500	87,636
British Columbia.....	219,975	805,103
<b>Canada.....</b>	<b>5,661,661</b>	<b>6,925,027</b>

**The Copper-Gold-Silver Mining Industry.**

The copper-gold-silver mining industry comprises a group of mines producing ore containing gold, silver and copper and in which the copper values predominate. The largest mines and the greatest number of this type are located in British Columbia, though Manitoba is known to have big ore reserves of copper awaiting adequate transportation and smelting conditions; Ontario has several small properties of this class, but they are mostly idle, and in the province of Quebec, the Eustis mine is at present the only producing property in this group.

British Columbia is the largest copper-producing province of the Dominion; the ores from each of the large producing mines are handled in the following manner:—

The Granby Consolidated Mining, Smelting and Power Company mine and smelt on the property which is at Anyox on the Portland Canal; the Britannia Mining and Smelting Company situated at Britannia Beach on Howe Sound, and the Belmont Surf Inlet Mining Co., Ltd., export ore and concentrates to the Tacoma smelter of the American Smelting and Refining Company. From the mines of the Rossland district, which are mainly owned and operated by the Consolidated Mining and Smelting Company, ore is shipped to the smelter at Trail. Other smaller properties which work intermittently, ship to the nearest smelter, either Trail, Tacoma or Anyox. In all, 15 mines of this class reported to the Bureau in 1924; of these 11 were producing, 10 being located in British Columbia and 1 in Quebec.

Because of close interplant relations, some companies do not find it possible to separate the capital invested in mines from that invested in their smelting operations. The Granby Consolidated is one of these and the total capital employed by this company has been included in the chapter on metallurgy. This company also operates coal mines but that investment has been separately itemized in the chapter on coal.

The capital employed by the Consolidated Mining and Smelting Company at Trail has been included in the chapter on metallurgy, while the amounts invested in the different mining properties have been accounted for in the silver-lead-zinc group and in the copper-gold-silver group.

Since 1920, copper mining has been somewhat depressed. At the close of the war the world's markets were over-supplied, with the result that many producers had to close down and to wait until the surplus supplies had been used up. In a great many cases, though the mines were not producing, the interval of inaction was spent in research with a view to obtaining higher recovery and cheaper production costs.

Although the European demand in 1924 was somewhat below the average pre-war level, yet conditions were more nearly normal owing to the successful application of the Dawes plan to rehabilitate the finances of Europe in general and Germany in particular. In the United States, large companies started an educational campaign to encourage a greater use of copper and thus to create a greater domestic demand for the metal.

The capital employed in this industry in 1924 amounted to approximately \$19,000,000 of which \$2,000,000 was invested in the province of Quebec and \$17,000,000 in the province of British Columbia.

Shipments of ores and concentrates in 1924 from the different copper-gold-silver mines in Canada amounted to over 1,000,000 tons, valued at over \$5,000,000 net. Foreign shipments amounted to 100,000 tons of concentrates. Shipments to Canadian smelters amounted to about 169,000 tons; this was slightly greater than in 1923. These concentrates and ores were reported to contain 81,970 fine ounces of gold, 690,913 fine ounces of silver and 77,763,207 pounds of copper.

Salaries and wages paid in the industry amounted to \$3,292,228 and employees numbered 2,118 persons. Of the wage-earners, 834 were employed on the surface and 1,172 worked underground. As this industry is well established and climatic conditions are favourable on the Pacific coast, there was no great monthly change in the number employed. Miscellaneous expenses amounted to \$1,855,511 in 1924 as against \$726,613 in 1923.

Table 240—Capital Employed in the Copper-Gold-Silver Mining Industry in Canada  
1923 and 1924.

	British Columbia				Ontario and Quebec				Canada			
	1923		1924		1923		1924		1923		1924	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
Producing Mines.....	8	34,243,321	10	a 17,196,699	1	1,359,837	1	1,796,332	9	35,603,058	11	a 18,993,031
Operating but not producing mines.....	b 5	1,269,397	4	106,814	.....	.....	.....	.....	5	1,269,397	4	106,814
Total.....	13	35,512,718	14	17,303,513	1	1,359,837	1	1,796,332	14	36,872,455	15	19,099,845

a Does not include the capital of Granby Co. Anyox, B.C.  
b Includes one from Alberta.

Table 241.—Shipments from Copper-Gold-Silver Mines of Canada, 1923 and 1924

Destination	Quantity	Net Value	Content as determined by settlement assay		
			Gold	Silver	Copper
	tons	\$	fine ozs.	fine ozs.	pounds
1923					
3 Mines shipped to Canadian smelters—					
Ores.....	856,674	1,292,661	10,831	461,319	37,486,660
Concentrates.....	45	1,057	8	27	12,266
5 Mines shipped to foreign smelters—					
Ores.....	3,673	36,061	64	4,271	271,083
Concentrates.....	89,903	3,031,707	35,786	128,797	24,548,204
<b>Total.....</b>	<b>950,295</b>	<b>4,361,486</b>	<b>46,689</b>	<b>594,414</b>	<b>62,318,213</b>
1924					
6 Mines shipped to Canadian smelters—					
Ores.....	966,264	1,474,674	44,436	535,000	42,518,595
Concentrates.....	2,738	30,634	66	3,483	2,070,594
5 Mines shipped to foreign smelters—					
Ores.....	100,114	3,721,551	37,468	152,430	33,174,018
Concentrates.....					
<b>Total.....</b>	<b>1,069,116</b>	<b>5,226,859</b>	<b>81,970</b>	<b>690,913</b>	<b>77,763,207</b>

Table 242.—Miscellaneous Expenses in the Copper-Gold-Silver Mining Industry in Canada, 1923 and 1924

	1923	1924
	\$	\$
Producing mines.....	726,158	1,852,215
Operating but non-producing mines.....	455	3,266
<b>Total.....</b>	<b>726,613</b>	<b>1,855,511</b>

Table 243.—Employees, Salaries and Wages in the Copper-Gold-Silver Mining Industry in Canada, 1923 and 1924

	1923			1924		
	Number of employees		Salaries and wages	Number of employees		Salaries and wages
	Male	Female	\$	Male	Female	\$
<b>SALARIED EMPLOYEES—</b>						
Superintendents and managers.....	27		100,196	23		97,222
Technical employees.....	29		60,553	56		125,065
Clerks, stenographers.....	40		53,551	26	7	44,909
<b>Total.....</b>	<b>96</b>		<b>214,302</b>	<b>105</b>	<b>7</b>	<b>267,196</b>
<b>WAGE-EARNERS—</b>						
Surface.....	864		2,789,990	834		3,025,032
Underground.....	830			1,172		
<b>Total.....</b>	<b>1,694</b>		<b>2,789,990</b>	<b>2,006</b>		<b>3,025,032</b>
<b>Grand Total.....</b>	<b>1,790</b>		<b>3,004,292</b>	<b>2,111</b>	<b>7</b>	<b>3,292,228</b>

**Table 244.—Number of Wage-Earners in the Copper-Gold-Silver Mining Industry in Canada, by Months, 1923 and 1924**

Month	1923			1924		
	Number of wage-earners			Number of wage-earners		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	726	561	1,287	813	1,152	1,965
February.....	741	676	1,417	828	1,161	1,987
March.....	744	654	1,398	838	1,120	1,958
April.....	767	760	1,527	861	1,172	2,033
May.....	878	811	1,689	900	1,245	2,145
June.....	978	784	1,762	910	1,141	2,051
July.....	965	873	1,838	728	1,173	1,901
August.....	941	899	1,840	808	1,106	1,914
September.....	966	931	1,897	806	1,154	1,960
October.....	918	953	1,876	801	1,143	1,944
November.....	886	1,007	1,893	758	1,170	1,928
December.....	857	1,036	1,893	740	1,077	1,817
Average.....	864	830	1,694	834	1,172	2,006

**The Silver-Cobalt Mining Industry.**

Silver-cobalt mining which had its inception with the discovery of the Cobalt camp in 1903 still yields most of the silver produced in Ontario. Production from the Cobalt area has fallen off slightly in recent years, but increased outputs from the newer camps of South Lorrain and Gowganda have so augmented production that Ontario has been able to maintain the premier position among the silver-producing provinces.

Mining and milling only have been considered in this section. Smelting of the cobalt ores, in so far as Canadian operations are concerned, has been reviewed in the section on metallurgical works. Only the two largest companies, namely, the Mining Corporation of Canada, Ltd., and the Nipissing Mining Company, Ltd., produced silver bullion in 1924. The other mines shipped ore either to one of these companies, or to the Deloro Smelting and Refining Company, or to foreign smelters. The greater part of the silver from the ores and concentrates treated by the two companies mentioned above is extracted by cyanidation and the residues, which may contain arsenic, cobalt, nickel and some silver are either sold to the Deloro Smelting and Refining Company, or are exported.

There were 34 shipping mines in this industry in 1924 as against 24 in 1923, but although the number of shipping mines was greater, the output of ore was 4,000 tons less than in 1923, and the quantity milled dropped 8,000 tons below the total for 1923. About the same tonnage of concentrates was produced in each year. Concentrates cyanided rose 4,000 tons. Bullion production was about 700,000 ounces below the 1923 figures.

Leading producers of silver were Nipissing, Mining Corporation, Keeley, O'Brien, Coniages, Castle-Tretheway, Menago and McKinley-Darragh-Savage mines; these companies also produced nearly 90 per cent of the ore mined in this industry.

Shipments of ores and concentrates to points outside of the camp amounted to 7,231 tons in 1924 as against 5,869 tons in 1923, and 9,931 tons in 1922.

Salaried officials totalled 132 in 1924 as against 115 in 1923 and wage-earners increased in number to 1,637 persons from a total of 1,293 in the previous year. Salaries and wages totalled \$2,534,304, or more than half a million dollars above the total for 1923.

**Table 245.—Capital Employed in the Silver-Cobalt Mining Industry in Canada, 1923 and 1924**

	1923	1924
	\$	\$
Capital employed as represented by—		
Cost of lands, buildings, and equipment.....	24,073,368	31,846,993
Cost of supplies and stock on hand.....	1,091,258	1,588,422
Cash, trading and operating accounts and bills receivable.....	6,169,424	7,578,044
<b>Total.....</b>	<b>31,334,050</b>	<b>41,013,466</b>

Table 246.—Principal Statistics of Silver-Cobalt Mines and Mills Operating in Canada, 1923 and 1924

	1923	1924
Number of mines in operation.....	24	34
Ore mined..... Tons	437,222	433,176
Ores treated..... Tons	436,896	428,509
Tailings treated..... Tons	822	7,360
Concentrates produced..... Tons	7,300	168,193
Quantity of material cyanided..... Tons	164,051	5,577,875
Bullion recovered..... Fine Ounces	6,278,830	5,004,992
Bullion sold..... Fine Ounces	6,018,259	3,369,664
Net value to operators..... \$	3,928,311	

Table 247.—Shipments of Ores, Concentrates and Residues from the Cobalt Camp, 1923 and 1924

Kind	Quantity	Gross value (a)	Net value (b)	Metallic content paid for		
				Silver	Cobalt	Copper
1923	Tons	\$	\$	fine ozs.	lb.	lb.
<i>To Canadian Smelters—</i>						
Ores.....	569	908,588	823,586	1,361,787	119,206	.....
Concentrates and residues.....	3,819	1,598,092	1,326,137	2,263,579	584,139	.....
<i>To Foreign Smelters—</i>						
Concentrates.....	1,481	504,537	443,819	790,767	5,802	66,512
<i>Total Shipments—</i>						
<b>Total ores and concentrates.....</b>	<b>5,869</b>	<b>3,011,217</b>	<b>2,593,542</b>	<b>4,416,133</b>	<b>709,147</b>	<b>66,512</b>
1924						
<i>To Canadian Smelters—</i>						
Ores.....	929	1,292,277 c	1,232,557	1,835,764	143,952	.....
Concentrates and residues.....	3,890	1,580,128	1,435,032	2,008,941	581,380	.....
<i>To Foreign Smelters—</i>						
Concentrates.....	2,412	741,161	556,779	886,292	93,780	107,252
<i>Total Shipments—</i>						
<b>Total ores and concentrates.....</b>	<b>7,231</b>	<b>3,613,566 d</b>	<b>3,224,368</b>	<b>4,820,997</b>	<b>819,112</b>	<b>107,252</b>

(a) Gross value means value of the metals paid for before deducting transportation and treatment charges, and includes exchange premium received.

(b) Net value is actual amount received by operator.

(c) Includes 15,406 ounces silver in nuggets shipped to Ontario Provincial Govt.

(d) Includes \$10,398 paid for nuggets shipped to Ontario Provincial Govt.

Table 248.—Employees, Salaries and Wages in the Silver-Cobalt Mining Industry in Canada, 1923 and 1924

	1923		1924	
	Number	Salaries and wages	Number	Salaries and wages
		\$		\$
<b>SALARIED EMPLOYEES.....</b>	<b>115</b>	<b>293,016</b>	<b>132</b>	<b>307,159</b>
<b>WAGE-EARNERS—</b>				
Mine.....	1,054	1,656,722	1,359	2,227,145
Mill.....	239		278	
<b>Total.....</b>	<b>1,293</b>	<b>1,656,722</b>	<b>1,637</b>	<b>2,227,145</b>
<b>Grand Total.....</b>	<b>1,408</b>	<b>1,949,738</b>	<b>1,769</b>	<b>2,534,304</b>

Table 249.—Number of Wage-Earners in the Silver-Cobalt Mining Industry in Canada by Months, 1923 and 1924

Month	1923				1924			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Under-ground			Surface	Under-ground		
January.....	316	669	251	1,236	385	814	255	1,454
February.....	324	673	234	1,231	412	821	257	1,490
March.....	318	696	237	1,251	429	831	258	1,518
April.....	303	672	233	1,208	401	855	262	1,518
May.....	345	672	234	1,251	397	900	271	1,568
June.....	356	693	239	1,288	371	820	255	1,446
July.....	364	710	247	1,321	400	791	253	1,444
August.....	388	699	246	1,333	408	802	253	1,463
September.....	397	692	237	1,326	405	823	257	1,490
October.....	429	667	230	1,326	453	865	261	1,579
November.....	412	745	235	1,392	428	867	258	1,553
December.....	370	734	241	1,345	406	875	262	1,543
Average.....	360	694	239	1,293	460	899	278	1,637

Table 250.—Miscellaneous Expenses in the Silver-Cobalt Mining Industry in Canada, 1923 and 1924

	1923	1924
	\$	\$
Producing mines.....	2,132,114	2,405,360
Operating but non-producing.....		73,956
Total.....	2,132,114	2,479,316

### The Nickel-Copper Industry.

Ontario is the world's present principal sources of nickel ore. Mining, smelting and refining operations are carried on within the province.

Smelting of the ore to a copper-nickel matte containing 27 to 28 per cent copper and 50 to 53 per cent nickel, is done in close proximity to the mines while the refining operations are carried on at points more conveniently located in respect to manufacturing concerns.

The Mond Nickel Company exports matte to Wales for refining. The International Nickel Company ships some matte to the refinery at Port Colborne, Ontario. Here there are extracted the copper, nickel, and precious metal precipitates containing gold, silver, platinum, palladium and other precious metals. The balance of the matte is exported to Huntington, West Virginia, U.S.A., where it is made directly into Monel metal, a non-corrosive alloy which is used advantageously to a large extent in many manufacturing plants.

The British America Nickel Company who formerly operated mines and a smelter at Nickel-ton, Ontario, and a refinery at Deschenes, Quebec, went into liquidation in July, 1924.

When the demand for nickel for armament purposes fell away, at the close of the war, the market became very dull but through research many new uses for this metal have been found, with the result, that the industry recovered its commercial importance.

The mines, smelters and refineries in this industry employed on the average 3,917 men to whom wages amounting to \$4,727,311 were paid, as against 3,231 persons in 1923 who received \$4,332,544 in wages. Salaried employees remained about the same in number at 233 and the amount paid to this group was \$507,603, as against \$531,345, in 1923. Miscellaneous expenses were \$5,188,818, in 1924 as against \$4,668,236 in 1923.

Table 251.—Capital Employed in the Nickel-Copper Industry in Canada, 1923 and 1924

	1923	1924
	\$	\$
Lands, Buildings, plant machinery and tools:—		
Mines.....	*22,758,935	36,778,684
Smelters.....	14,400,380	14,769,823
Refineries.....	9,578,634	9,600,702
Cost of materials and supplies on hand.....	7,339,709	7,653,042
Cash, trading and operating accounts and bills receivable.....	1,205,280	1,954,218
<b>Total.....</b>	<b>55,282,918</b>	<b>70,756,469</b>

\* Exclusive of value of lands in 1923.

Table 252.—Output from Nickel-Copper Mines and Smelters in Canada, 1923 and 1924

	1923	1924
Ore mined..... Tons	1,187,355	1,411,978
Ore shipped..... "	1,168,139	1,354,650
Content of ores, etc., shipped:		
Copper..... Lb.	35,635,726	42,349,039
Nickel..... "	72,855,433	81,068,547
Ore and concentrates treated at smelters..... Tons	1,140,160	1,307,693
Matte produced..... "	58,084	65,944
Content of matte:		
Copper..... Lb.	31,538,710	36,979,424
Nickel..... "	62,057,835	69,276,313
Matte shipped to Canadian refineries..... Tons	35,612	34,835
Matte exported to foreign refineries..... "	21,450	26,565

Table 253.—Output from Nickel-Copper Refineries in Canada, 1923 and 1924

		1923		1924	
		Quantity	Value	Quantity	Value
			\$		\$
Matte received..... Tons		35,668		34,428	
Matte treated..... "		31,765		37,613	
Products made—					
Refined nickel..... Lb.	(a)	23,203,741	3,935,092	25,448,868	5,313,582
Nickel oxide..... "		11,377,086	1,653,909	12,064,870	2,056,259
Converter and refined copper..... "		14,761,787	2,075,228	17,918,911	2,258,846
Gold..... Fine ozs		876	19,522	878	17,531
Silver..... "		54,075	34,536	58,145	38,607
Platinum..... "		1,210	127,018	1,353	139,102
Palladium..... "		1,732	118,902	1,744	117,887
Iridium and rhodium..... "		304	40,957	593	51,120
<b>Total value.....</b>			<b>8,010,164</b>		<b>9,992,934</b>

(a) Electrolytic Nickel and Nickel shot.

Table 254.—Salaried Employees by Classes, and Salaries Paid in the Nickel-Copper Industry in Canada, 1923 and 1924

	At the mines		At the smelters		At the refineries		Total	
	No.	Salaries paid	No.	Salaries paid	No.	Salaries paid	No.	Salaries paid
		\$		\$		\$		\$
<b>1923</b>								
Superintendents, managers, etc.....	8	36,500	18	99,113	6	44,122	32	179,735
Technical employees—								
Engineers, surveyors, chemists, draughts-	5	7,851	21	57,114	38	58,668	64	123,633
men, etc.....	10	16,987	46	68,532	81	142,458	137	227,977
Clerks, stenographers, etc.....								
<b>Total.....</b>	<b>23</b>	<b>61,338</b>	<b>85</b>	<b>224,759</b>	<b>125</b>	<b>245,248</b>	<b>233</b>	<b>531,345</b>
<b>1924</b>								
Superintendents, managers, etc.....	7	35,050	25	97,022	7	39,095	39	171,167
Technical employees—								
Engineers, surveyors, chemists, draughts-	9	13,913	29	60,358	33	43,800	71	118,071
men, etc.....	11	16,923	45	75,949	67	125,493	123	218,365
Clerks, stenographers, etc.....								
<b>Total.....</b>	<b>27</b>	<b>65,886</b>	<b>99</b>	<b>233,329</b>	<b>107</b>	<b>208,388</b>	<b>233</b>	<b>507,603</b>

Table 255.—Number of Employees by Months and Wages Paid in the Nickel-Copper Industry in Canada, 1923 and 1924

	At the mines			At the smelters	At the refineries	Total
	Surface	Under ground	Total			
	No.	No.	No.	No.	No.	No.
<b>1923</b>						
January.....	281	486	767	921	612	2,300
February.....	302	488	790	931	627	2,348
March.....	301	564	865	936	586	2,387
April.....	325	499	824	1,077	755	2,656
May.....	329	604	1,023	1,203	913	3,139
June.....	358	737	1,095	1,350	1,009	3,454
July.....	371	738	1,109	1,406	1,079	3,594
August.....	383	725	1,108	1,430	1,134	3,672
September.....	415	713	1,128	1,466	1,143	3,737
October.....	423	821	1,244	1,600	986	3,830
November.....	472	866	1,338	1,547	956	3,841
December.....	501	900	1,401	1,524	888	3,813
<b>Total wages 1923.....</b>			<b>\$1,359,748</b>	<b>\$1,733,654</b>	<b>\$1,239,142</b>	<b>\$4,332,544</b>
<b>1924</b>						
January.....	393	937	1,330	1,597	911	3,838
February.....	420	968	1,388	1,618	982	3,988
March.....	505	1,066	1,571	1,636	949	4,156
April.....	501	1,064	1,565	1,632	925	4,122
May.....	523	1,073	1,596	1,649	994	4,239
June.....	524	1,111	1,635	1,673	943	4,251
July.....	543	1,123	1,666	1,622	786	4,074
August.....	403	788	1,191	1,135	384	2,710
September.....	401	761	1,162	1,136	369	2,667
October.....	425	792	1,217	1,123	449	2,789
November.....	441	779	1,220	1,168	483	2,871
December.....	410	784	1,194	1,188	572	2,954
<b>Total wages 1924.....</b>			<b>\$1,814,937</b>	<b>\$1,867,712</b>	<b>\$1,044,662</b>	<b>\$4,727,311</b>

Table 256.—Miscellaneous Expenses in the Nickel-Copper Industry in Canada, 1923 and 1924

Industry	1923	1924
	\$	\$
Mines and mills.....	1,386,605	1,673,492
Smelters and refineries.....	3,281,631	3,515,326
<b>Total.....</b>	<b>4,668,236</b>	<b>5,188,818</b>

### The Silver-Lead-Zinc Industry.

Producing, concentrating, smelting and refining of ores of the silver-lead-zinc group is an industry that is fairly well confined to the province of British Columbia, though the Yukon Territory produces high-grade silver-lead ore. Ontario has one lead mine at Galetta in the County of Carleton, and Quebec has been an intermittent producer of lead and zinc ore for some years.

The West Kootenay area in British Columbia in the vicinity of Nelson, Kaslo, Sandon, Three Forks, New Denver and Silverton has long been a producer of galena ore, containing silver and zinc, and the smelter of the Consolidated Mining and Smelting Company has been the chief purchaser of these ores.

In East Kootenay large ore deposits containing lead and zinc have been known for some time but the treatment of the ore presented a difficult metallurgical problem, which has only recently been solved through the work done by the research staff of the Consolidated Mining and Smelting Company who own the Sullivan mine in this district. As a result of this research, which cost millions of dollars, British Columbia now produces enormous quantities of lead and zinc annually; most of this production is derived from the ores of the Sullivan mine. Other important producers in British Columbia are the Silversmith, Wallace Idaho, Rosebery-Surprise, Wallace-Mountain,

and the Cork-Province. In the Yukon Territory, the Treadwell-Yukon Company and the Keno-Hill, Limited, were the only two shipping mines. The ore mined in this remote district, is often not shipped until the following year but is hauled down to the wharf in winter and piled there awaiting the opening of navigation in the spring.

The operations of Ontario's only lead mine at Galetta are self-contained; the ores are mined, concentrated and smelted right on the property so that there are no heavy shipping costs connected with producing operations and the pig lead is shipped directly to the purchasers. In Quebec during 1924 two companies were in operation, the British Metals Corporation who were concentrating the zinc dumps at Notre Dame des Anges, by the flotation process, and the Tetreault mine operated by the Tetreault Estate. Both of these companies exported concentrates to the United States and Belgium. The following tables show the capital invested by provinces and the ore mined, milled, and shipped from the different provinces for the years 1923 and 1924.

Because of the high price of lead and the continued fair price for zinc this particular industry shows marked increases in all its different activities.

**Table 257.—Capital Employed in the Silver-Lead-Zinc Mining Industry in Canada, 1923 and 1924**

Province	Capital employed as represented by			
	Cost of lands, buildings and equipment	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total
1923	\$	\$	\$	\$
Quebec.....	150,000	15,000	.....	165,000
British Columbia.....	6,139,780	597,296	113,097	6,850,173
Yukon.....	1,687,401	251,518	249,905	2,188,824
<b>Canada.....</b>	<b>7,977,181</b>	<b>863,814</b>	<b>363,002</b>	<b>9,203,997</b>
1924				
Quebec.....	150,000	5,000	.....	155,000
Ontario.....	866,640	264,678	5,834	1,137,152
British Columbia.....	7,624,835	633,342	360,088	8,618,265
Yukon.....	1,893,091	309,548	215,455	2,418,094
<b>Canada.....</b>	<b>10,534,566</b>	<b>1,212,568</b>	<b>581,377</b>	<b>12,328,511</b>

**Table 258.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry, 1923 and 1924**

Production	Ontario and Quebec	British Columbia	Yukon	Canada
1923	Tons	Tons	Tons	Tons
Ore mined.....	66,824	561,808	7,866	636,498
Ore milled.....	66,824	260,144	.....	326,968
Concentrates produced—lead.....	5,273	30,929	.....	36,202
“ “ zinc.....	4,000	44,476	.....	48,476
1924				
Ore mined.....	74,932	1,124,343	764	1,200,039
Ore milled.....	74,932	1,012,651	.....	1,087,583
Concentrates produced—lead.....	3,286	130,698	.....	133,984
“ “ zinc.....	.....	130,365	.....	130,365

Table 259.—Products Shipped by Silver-Lead-Zinc Mines in Canada, 1923 and 1924

Location of mines	No. of mines shipping	Product shipped	Quantity shipped	Net value at shipping point	Total metal content as determined by settlement assay			
					Gold	Silver	Lead	Zinc
			tons	\$	ozs.	ozs.	lb.	lb.
<b>1923</b>								
Quebec and Ontario.	3	Lead ore.....						
		Lead concentrates.....	5,273	403,792	667	31,119	6,305,274	3,475,553
		Zinc concentrates.....	613	7,700		3,624	38,080	488,320
		Total.....	5,886	411,492	667	34,743	6,343,354	488,320
British Columbia....	75	Lead ore.....	30,201	1,010,896	134	665,090	15,849,921	3,920,630
		Lead concentrates.....	30,940	2,381,555	244	1,047,907	37,092,272	3,475,553
		Zinc ore.....	234,140	1,215,113	5	785,334	52,831,454	60,964,991
		Zinc concentrates.....	44,476	630,301	60	325,267	4,720,118	34,695,423
		Dry ore.....	684	74,198	29	125,082	59,866	600
		Total.....	340,441	5,312,063	472	2,948,680	110,553,631	103,057,197
Yukon.....	6	Lead ore.....	10,472	896,512	127	2,001,013	7,523,459	1,329,192
<b>Total for Canada...</b>	<b>84</b>		<b>356,799</b>	<b>6,620,067</b>	<b>1,266</b>	<b>4,984,436</b>	<b>124,420,444</b>	<b>104,874,709</b>
<b>1924</b>								
Québec and Ontario.	3	Lead ore.....						
		Lead concentrates.....	4,505	506,797	833	83,383	6,059,733	7,700
		Zinc concentrates.....	3,034	90,674			136,400	3,628,560
		Total.....	7,539	597,471	833	83,383	6,196,133	3,636,260
British Columbia....	76	Lead ore.....	16,732	937,150	521	1,029,675	7,583,745	1,419,429
		Lead concentrates.....	130,630	10,672,543	197	2,982,073	165,532,094	16,303,481
		Zinc ore.....	57,771	337,036	6	282,635	11,840,375	13,539,465
		Zinc concentrates.....	130,564	3,882,561	106	485,517	10,395,846	112,475,606
		Dry ore.....	207	14,062	28	22,689	7,638	1,050
		Total.....	335,904	15,843,352	858	4,782,589	195,359,701	143,739,031
Yukon.....	4	Lead ore.....	1,322	160,147		230,423	1,003,911	20,017
<b>Total for Canada...</b>	<b>83</b>		<b>344,765</b>	<b>16,600,970</b>	<b>1,691</b>	<b>5,096,395</b>	<b>202,559,745</b>	<b>147,395,308</b>

Table 260.—Shipments of Lead Ores from Canadian Mines, 1913-1924

Year	Lead ores shipped		Lead content in pounds	Silver content in ounces
	Tons	Value		
		\$		
1913.....	85,978	3,276,812	53,807,570	2,564,155
1914.....	70,207	2,652,802	50,527,130	2,501,820
1915.....	73,752	2,958,394	48,708,005	2,954,175
1916.....	84,516	4,568,500	54,124,628	2,582,952
1917.....	46,799	3,866,862	38,696,116	1,670,064
1918.....	75,256	4,705,573	46,843,602	2,314,542
1919.....	54,508	3,044,839	32,147,989	2,185,376
1920.....	69,493	2,985,848	36,325,507	2,882,178
1921.....	15,259	671,313	9,517,616	989,374
1922.....	27,203	1,803,575	21,335,850	2,163,637
1923.....	76,886	4,692,755	66,770,926	3,745,129
1924.....	153,396	12,290,699	180,187,124	4,348,243

Table 261.—Shipments of Zinc Ores from Canadian Mines, 1898-1924

Year	Zinc ore shipped		Metallic zinc in ore shipped	Year	Zinc ore shipped		Metallic zinc in ore shipped
	Tons	Value	Pounds		Tons	Value	Pounds
		\$				\$	
1898.....	1,162	11,000	788,000	1912.....	6,415	215,149	5,354,700
1899.....	865	18,165	814,000	1913.....	7,889	186,827	7,069,800
1900.....	261	4,810	212,000	1914.....	10,893	262,563	9,101,460
1901*.....				1915.....	14,895	554,938	12,231,439
1902.....	158	1,659	142,200	1916.....	82,077	1,086,249	48,498,078
1903.....	1,000	10,500	900,000	1917.....	116,489	1,323,985	64,655,713
1904.....	597	3,700	477,568	1918.....	121,200	1,228,195	63,026,464
1905.....	9,413	139,200	*	1919.....	135,535	1,049,493	59,959,709
1906.....	1,154	23,800	*	1920.....	249,136	1,157,844	91,033,202
1907.....	1,573	49,100	*	1921.....	297,406	1,498,716	98,799,093
1908.....	452	3,215	*	1922.....	356,096	2,357,849	102,975,964
1909.....	18,371	242,699	16,468,204	1923.....	279,229	1,853,114	96,148,734
1910.....	5,063	120,003	4,361,712	1924.....	191,369	4,310,271	129,643,631
1911.....	2,590	101,072	2,346,849				

\*Figures not available. †Includes 7,424 tons shipped late in 1903.

Table 262.—Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry in Canada, 1923 and 1924

Class	1923				1924			
	British Columbia		Canada*		British Columbia		Canada*	
	Number	Salaries and Wages	Number	Salaries and Wages	Number	Salaries and Wages	Number	Salaries and Wages
		\$		\$		\$		\$
<b>SALARIED EMPLOYEES—</b>								
Superintendents and managers...	36	90,168	43	111,635	43	113,269	52	153,149
Technical employees.....	15	29,500	19	39,136	22	38,880	29	47,451
Clerks and stenographers.....	22	25,377	26	33,328	35	44,069	45	62,304
<b>Total.....</b>	<b>73</b>	<b>145,045</b>	<b>88</b>	<b>184,099</b>	<b>100</b>	<b>196,218</b>	<b>126</b>	<b>262,904</b>
<b>WAGE-EARNERS—</b>								
Surface and mill.....	400	1,386,836	529	1,840,653	680	2,176,239	844	2,680,731
Underground.....	515		735		730		966	
<b>Total.....</b>	<b>915</b>	<b>1,386,836</b>	<b>1,264</b>	<b>1,840,653</b>	<b>1,410</b>	<b>2,176,239</b>	<b>1,810</b>	<b>2,680,731</b>
<b>Grand Total.....</b>	<b>988</b>	<b>1,531,881</b>	<b>1,352</b>	<b>2,024,752</b>	<b>1,510</b>	<b>2,372,457</b>	<b>1,936</b>	<b>2,943,635</b>

\*Totals for Canada include data for other mines—  
 { 3 in Quebec, 1 in Ontario and 4 in the Yukon in 1923.  
 { 2 in Quebec, 1 in Ontario and 4 in the Yukon in 1924.

Table 263.—Number of Wage-Earners in the Silver-Lead-Zinc Mining Industry in Canada, by Months, 1923 and 1924

Month	1923			1924		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	461	632	1,093	619	789	1,408
February.....	397	621	1,018	655	799	1,454
March.....	401	622	1,023	692	851	1,543
April.....	418	631	1,049	722	860	1,582
May.....	448	755	1,203	778	915	1,723
June.....	502	739	1,241	818	961	1,779
July.....	476	739	1,215	796	994	1,790
August.....	603	750	1,353	822	1,002	1,824
September.....	614	736	1,350	874	1,045	1,919
October.....	683	768	1,451	908	993	1,811
November.....	678	772	1,450	904	894	1,798
December.....	600	769	1,369	699	815	1,514
<b>Average.....</b>	<b>529</b>	<b>735</b>	<b>1,264</b>	<b>844</b>	<b>966</b>	<b>1,810</b>

Table 264.—Miscellaneous Expenses in the Silver-Lead-Zinc Mining Industry in Canada, 1923 and 1924

Province	1923	1924
	\$	\$
Quebec, Ontario and Yukon.....	615,559	463,669
British Columbia.....	1,052,373	339,213
<b>Canada.....</b>	<b>1,667,932</b>	<b>802,882</b>

Table 265.—Destination of Shipments from Silver-Lead-Zinc Mines in Canada, 1923 and 1924

Product shipped	Tons shipped	Net value at shipping point	Total metal content as determined by settlement assay			
			Gold	Silver	Lead	Zinc
<b>1923</b>		\$	ozs.	ozs.	lb.	lb.
<i>To Canadian Smelters—</i>						
Lead ore.....	30,127	1,007,504	132	661,317	15,804,900	3,920,130
Lead concentrates.....	35,223	2,724,957	244	1,037,857	42,186,967	3,475,553
Zinc ore.....	234,140	1,215,113	5	785,334	52,831,454	60,964,991
Zinc concentrates.....	44,476	630,301	60	325,267	4,720,118	34,695,423
Dry ore.....	684	74,198	29	125,082	59,866	600
<b>Total.....</b>	<b>344,650</b>	<b>5,652,073</b>	<b>470</b>	<b>2,934,857</b>	<b>115,603,305</b>	<b>103,056,697</b>
<i>To United States Smelters—</i>						
Lead ore.....	10,546	899,904	129	2,004,786	7,568,480	1,329,692
Lead concentrates.....	990	60,390	667	41,169	1,210,579	.....
Zinc concentrates.....	613	7,700	.....	3,624	38,080	488,320
<b>Total.....</b>	<b>12,149</b>	<b>967,994</b>	<b>796</b>	<b>2,049,579</b>	<b>8,817,139</b>	<b>1,818,012</b>
<b>1924</b>						
<i>To Canadian Smelters—</i>						
Lead ore.....	15,149	788,337	237	784,244	6,893,298	1,419,145
Lead concentrates.....	133,916	11,064,512	197	2,982,073	170,551,579	16,303,481
Zinc ore.....	57,771	337,036	6	282,635	11,840,375	13,539,465
Zinc concentrates.....	73,529	2,211,546	106	368,495	6,110,769	61,085,803
Dry ore.....	207	14,062	28	22,689	7,638	1,050
<b>Total.....</b>	<b>250,572</b>	<b>14,405,493</b>	<b>574</b>	<b>4,420,136</b>	<b>195,403,659</b>	<b>92,348,944</b>
<i>To Foreign Smelters—</i>						
Lead ore.....	2,905	308,960	284	475,854	1,694,361	20,301
Lead concentrates.....	1,219	124,828	833	83,383	1,040,248	7,700
Zinc ore.....	.....	.....	.....	.....	.....	.....
Zinc concentrates.....	60,069	1,761,689	.....	117,022	4,421,477	55,018,363
<b>Total.....</b>	<b>64,193</b>	<b>2,195,477</b>	<b>1,117</b>	<b>676,259</b>	<b>7,156,086</b>	<b>55,046,364</b>

## Metallurgical Works.

It was found impossible in several cases to draw any line of demarcation between mining proper and those operations carried on above ground by establishments that give treatment of one kind or another to the crude ore after it is mined, since it has been the custom to consider this preparation for market or for further treatment as part of the mining operations.

In a number of instances, however, it has been possible to obtain certain statistics regarding smelting and refining plants operated in conjunction with mines, and the present section has been designed to present in a correlated manner the principal data furnished by these concerns and by similar plants operated independently of mines, in which the reduction of ores either by fire or by electricity was carried on for the production of the non-ferrous metals or compounds of them.

During the year great progress was made around the smelter at Trail. Production was increased and the work of the enlarging part of the plant to treat the greater tonnage of ore from the Sullivan mine, kept many men employed. The copper smelter and refinery were in operation from May 6th to September 30th. The Granby smelter at Anyox operated throughout the year. The nickel copper smelters in Ontario had the best season since the curtailing of operations in 1921. In the smelting of the cobalt ores, the Deloro Smelting and Refining Company reported a very busy season but the Coniagas Reduction Company at Thorold, Ontario, did practically no work except some cleaning up around the smelter. There were increases in mill outputs in the gold-mining districts of northern Ontario but for reasons already mentioned records of their operations have not been included in this section. The names of the operating companies by provinces, with their principal products follow:—

#### BRITISH COLUMBIA

*The Consolidated Mining and Smelting Company of Canada, Ltd.*, Trail, B.C., operating many mines in addition to a large smelter and refineries producing gold, silver, lead, copper, copper sulphate, and zinc;

*The Granby Consolidated Mining, Smelting and Power Company, Ltd.*, Anyox, B.C., operating mines and a copper smelter and producing copper, gold and silver.

#### ONTARIO.

*The International Nickel Company of Canada, Ltd.*, Copper Cliff, Ont., operating several mines and a smelter near Copper Cliff, and a refinery for matte at Port Colborne, Ontario, producing nickel and compounds of nickel, converter copper, and small amounts of the precious metals such as gold, silver, platinum and others of the platinum group;

*The Mond Nickel Company*, operating mines and a smelter at Coniston, Ontario, but shipping the smelter matte to Wales for refining;

*The British America Nickel Corporation*, operating mines and a smelter near Sudbury, and refining the matte at Deschenes, Que., producing nickel and nickel compounds, copper and some precious metals, (this company went into liquidation in July, 1924);

*The Coniagas Reduction Company* operating a smelter at St. Catharines, Ontario, and producing silver bullion, the metals and oxides of cobalt and nickel, white arsenic and copper sulphate;

*The Deloro Smelting and Refining Company*, operating at Deloro, Ontario, smelting cobalt ores and producing silver bullion, metals and oxides of cobalt and nickel, white arsenic, the alloy "stellite" and insecticides;

*The Kingdon Mining, Smelting and Manufacturing Company*, Galetta, Ontario, producing a pig lead from galena ores;

*The Canadian Zinc Products Company* operated their zinc oxide plant for a short time during 1921, but it was partially destroyed by fire in August of that year, and has not since been reopened.

#### NEW BRUNSWICK.

The North American Antimony Smelting Company, Lake George producing antimony regulus (idle). The company has been re-organized and is now known as the *Antimony Products Corporation*.

The groups selected for review in the following tables are: The nickel-copper smelting and refining group, comprising three companies which operated three smelting establishments, all in Ontario, and two refineries, one of which was in Ontario and the other in Quebec; the silver-cobalt smelters and refineries, including two companies engaged in treating silver ores from the cobalt camp; and the copper-lead-zinc smelters and refineries in which two companies were active, both being in British Columbia.

The smelting operations at the Kingdon Mining and Smelting Company at Galetta are not included in this group but are included in the silver-lead-zinc mining industry because at that particular plant the mining operations predominate.

The capital actually employed in the metallurgical plants of Canada, whose operations are reviewed in this section, amounted to approximately 65 million dollars as against 64 million dollars in 1923 and was made up of 45 million dollars in lands, buildings, plant, machinery and tools, 14 millions in materials on hand, supplies, finished products and ore waiting to be treated, and 6 millions in cash, trading, and operating accounts and bills receivable.

There were 5,521 salaried workers and wage-earners employed in the industry to whom \$8,136,251 was paid as against 4,968 in 1923 who received \$7,930,236.

Sales of smelter products in 1924 totalled over 42 million dollars in value which was an increase of 7 millions over the total for the previous year. Increases occurred in each of the groups but a six-million-dollar advance over the sales of 1923 in the copper-lead-zinc smelters of British Columbia accounted for the greater part of the increase. Lead and zinc were in demand and production far surpassed that of any previous year; this was the main cause of the increase in sales of these two metals.

The total quantities and values given in the table on smelter products do not agree with the data shown as the mineral production of Canada in Part One of this report, since some portions of the metal produced in Canadian smelters were recovered from foreign ores treated in Canada and also because large quantities of metals mentioned in Part One did not pass through any Canadian smelter but were recovered either by hydro-metallurgical operations or in foreign smelters to which they had been shipped for treatment.

In the table on summary expenditure on metallurgical works in Canada 1924 the smelting industry is looked upon as a manufacturing plant, and the raw materials used are the ores, concentrates, etc.

In some cases it was very difficult to get an average price per ton of ore as the mining, milling and smelting operations as carried on by some companies can not easily be separated. Where no information on the cost of ores was available, estimates were made based on the metal content of the ore and the cost of mining, but an attempt was made to use as fair a price as the information at hand would permit.

In 1924 the total expenditure amounted to \$40,181,159 as against, \$34,463,275 in 1923.

Sales for the year amounted to \$42,154,808 showing that the value added by the smelters in the conversion of raw ores into saleable products of commerce amounted to about 2 million dollars. Or, on the other hand, by adding the net values of the shipments from the mines to the net value of shipments from the metallurgical plants and deducting the total expenditure, the total gain to the mining and metallurgical industry during 1924 amounted to about 29 million dollars as already indicated in Table 223 at the beginning of this section.

**Table 266.—Capital Actually Employed in the Metallurgical Plants of Canada, 1923 and 1924**

Item	1923				1924			
	Lands, buildings, plant, machinery and tools	Materials on hand, supplies, finished products, ore on dump	Cash, trading, and operating accounts, bills receivable	Total	Lands, buildings, plant, machinery and tools	Materials on hand, supplies, finished products, ore on dump	Cash trading and operating accounts, bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nickel-copper smelters and refineries.....	23,978,994	6,929,832	1,205,280	32,114,106	24,370,525	7,211,948	1,954,218	33,566,691
Silver-cobalt smelters.....	1,442,127	434,620	2,174,806	4,051,553	1,176,220	398,585	2,423,752	3,998,557
Copper, lead and zinc smelters and refineries.....	22,316,186	4,697,724	1,111,362	28,125,272	19,843,526	6,161,347	1,132,591	27,137,464
<b>Total.....</b>	<b>47,737,307</b>	<b>12,062,176</b>	<b>4,491,448</b>	<b>64,290,931</b>	<b>45,390,271</b>	<b>13,801,880</b>	<b>5,510,561</b>	<b>64,702,712</b>

Table 267.—Ores, Concentrates, etc., Treated in Canadian Smelters, 1923 and 1924.

Group	1923	1924
	Tons	Tons
<b>Nickel-Copper—</b>		
Ores treated.....	1,140,160	1,307,694
Matte produced.....	58,084	65,944
Matte exported for refining.....	21,450	26,565
Matte treated in Canadian refineries.....	31,765	34,835
<b>Silver-Cobalt-Nickel—</b>		
Ores treated.....	751	523
Concentrates treated.....	2,180	3,032
Residues treated.....	4,794	1,698
<b>Copper-Lead-Zinc—</b>		
Copper, ores and concentrates.....	874,567	861,847
Lead ores.....	39,009	18,036
Lead concentrates.....	62,692	118,978
Gold ores (imported).....	16,716	14,677
Zinc residues.....	57,385	53,253
Other ores.....	183	571
Zinc Ore.....		1,270
Zinc concentrates.....	111,620	86,768
" ore (imported).....	2,730	

Table 268.—Products Sold by the Metallurgical Works in Canada, 1924

Industry and Material	Sold	
	Quantity	Value
		\$
<b>NICKEL-COPPER SMELTERS AND REFINERIES—</b>		
Matte..... tons	26,565	4,667,136
Nickel, nickel oxide and copper.....		9,760,022
Residues containing gold..... fine oz	878	17,530
silver..... "	58,145	38,607
platinum..... "	1,353	139,102
palladium..... "	1,744	117,887
others..... "	593	51,120
Total.....		14,791,404
<b>SILVER-COBALT SMELTERS AND REFINERIES—</b>		
Silver bullion (fine)..... fine oz.	4,309,595	2,936,927
Arsenic Ass.Os..... lb.	3,596,165	309,108
Cobalt metal, oxide, salts (metal content).....	626,400	1,421,826
Nickel metal, oxide, salts (metal content).....	42,482	9,418
Speiss residues exported..... tons	637	235,317
Copper sulphate..... lb.	10,672	533
Silver-lead-bismuth-bullion..... lb.	60,044	87,264
Total.....		5,000,393
<b>COPPER-LEAD-ZINC SMELTERS—</b>		
Blister copper, refined copper and copper sulphate (copper content)..... lb.	34,996,508	5,005,982
Gold..... fine oz.	23,412	484,001
Silver..... "	3,124,834	2,098,186
Lead and zinc and lead bullion..... lb.		14,774,842
Total.....		22,363,011
<b>Total Sales.....</b>		<b>42,154,808</b>

Table 269.—Summary of Expenditures in Metallurgical Works in Canada, 1923 and 1924

Item	1923	1924
	\$	\$
Estimated cost of ores, etc. treated, in silver-cobalt smelters.....	2,000,000	2,208,812
Estimated cost of ores, etc., treated, in nickel-copper smelters.....	3,420,500	3,923,082
Estimated cost of ores etc., treated, in copper, lead and zinc smelters.....	9,418,585	14,262,641
Total salaries and wages.....	7,930,236	8,136,251
Cost of fuel and electricity.....	*5,221,278	*4,765,483
Miscellaneous expenses.....	6,472,676	6,884,890
<b>Total expenditures.....</b>	<b>34,463,275</b>	<b>40,181,159</b>

\*Includes \$1,164,444 expended for electric power in 1923 and \$915,404 in 1924.

Table 270.—Employees, Salaries and Wages in the Metallurgical Works in Canada, 1923 and 1924

Group	1923				1924			
	On smelter pay-roll		On refinery pay-roll		On smelter pay-roll		On refinery pay-roll	
	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages
		\$		\$		\$		\$
Nickel-Copper Smelters and Re- fineries—								
Salaried employees.....	85	224,759	125	245,248	99	233,329	107	208,388
Wage-earners.....	1,283	1,733,654	891	1,239,142	1,640	1,867,712	883	1,044,662
Silver-Cobalt-Nickel Smelters and Refineries Combined—								
Salaried employees.....	56	147,788			56	131,795		
Wage-earners.....	481	475,394			372	341,513		
Copper-Lead-Zinc Smelters and Re- fineries—								
Salaried employees.....	223	565,649			257	605,673		
Wage-earners.....	1,824	3,298,602			2,107	3,703,179		
All the Metallurgical Works—								
Superintendents.....	72	335,419	6	44,122	70	337,286	7	39,095
Technical employees: engineers, chemists, draughtsmen, etc....	126	316,403	38	58,668	180	369,869	33	43,800
Clerks, stenographers, etc.....	166	286,374	81	142,458	162	263,642	67	125,493
Total—Salaried employees	364	938,196	125	245,248	412	970,797	107	208,388
Wage-earners.....	3,588	5,507,650	891	1,239,142	4,119	5,912,404	883	1,044,662
<b>Grand total.....</b>	<b>3,952</b>	<b>6,445,846</b>	<b>1,016</b>	<b>1,484,390</b>	<b>4,531</b>	<b>6,883,201</b>	<b>990</b>	<b>1,253,050</b>

Table 271.—Number of Wage-Earners in the Metallurgical Works in Canada, by Months, 1923 and 1924.

Month	1923				1924			
	Nickel-Copper smelters and refineries	Silver-Cobalt-Nickel smelters and refineries	Copper-Lead-Zinc smelters and refineries	Total	Nickel-Copper smelters and refineries	Silver-Cobalt-Nickel smelters and refineries	Copper-Lead-Zinc smelters and refineries	Total
January.....	1,533	378	1,735	3,646	2,508	412	1,792	4,712
February.....	1,558	394	1,710	3,662	2,600	345	1,878	4,823
March.....	1,522	393	1,798	3,713	2,585	342	1,927	4,854
April.....	1,332	426	1,845	4,103	2,557	346	1,912	4,815
May.....	2,116	446	1,817	4,379	2,643	376	1,936	4,955
June.....	2,359	548	1,845	4,752	2,616	363	2,080	5,059
July.....	2,485	527	1,889	4,901	2,408	378	2,198	4,984
August.....	2,564	554	1,969	5,087	1,519	362	2,289	4,170
September.....	2,609	507	1,828	4,944	1,505	342	2,270	4,117
October.....	2,586	545	1,898	5,029	1,572	332	2,311	4,215
November.....	2,503	577	1,825	4,905	1,651	233	2,381	4,265
December.....	2,412	476	1,727	4,615	1,760	242	2,297	4,299
<b>Average.....</b>	<b>2,174</b>	<b>481</b>	<b>1,824</b>	<b>4,479</b>	<b>2,523</b>	<b>372</b>	<b>2,107</b>	<b>5,002</b>

Table 272.—Miscellaneous Expenses Chargeable to Smelting and Refining Operations in Canada, 1923 and 1924

	1923	1924
	\$	\$
Nickel-Copper smelters and refineries.....	3,281,631	3,515,326
Silver-Cobalt smelters and refineries.....	850,264	378,030
Copper-Lead-Zinc smelters and refineries.....	2,340,781	2,991,534
<b>Total.....</b>	<b>6,472,676</b>	<b>6,884,890</b>

## NON-METALLIC MINERAL INDUSTRIES

## ASBESTOS

The eastern townships area in the Province of Quebec furnishes about 85 per cent of the world's production of asbestos. Rhodesia, the second producer, markets only the longer fibre stocks, and is therefore an important competitor, as Canadian mines ship both long and short fibre. The Union of South Africa and Russia have also become more important sources of supply, particularly to European markets; several other countries produce asbestos, but in less amounts.

Asbestos, owing to its fibrous structure and to the fact that it will not burn, finds many uses as a fireproofing material, particularly in felts, sheets, theatre drop-curtains, mitts, etc., and also as a principal component of roofings, shingles, pipe-coverings, brake linings and wall board, to mention only a few of the better-known uses. In the 1921 issue of this report, there was a description of the method used, in grading asbestos in the Quebec mills.

The industry in Canada was represented in 1924 by 15 firms. The amount of capital employed, comprising the value of lands, buildings, plant equipment, cost of materials and supplies on hand at the end of the year, and working capital including cash balances and bills receivable was \$43,216,966, an increase of \$501,409 over the total reported for the preceding year.

Employment was furnished to 2,597 persons including 125 salaried employees and the total disbursements in salaries and wages amounted to \$2,977,304. The peak of employment was in May, when 3,034 men were on the rolls.

United States asbestos operators reported a production of 300 tons in 1924. The Rhodesian output in 1924 advanced to 29,278 tons, while the quantity of asbestos produced in the Union of South Africa decreased approximately 1,000 tons to a total of 8,100 tons.

Table 273.—Principal Statistics of the Asbestos Industry in Canada, 1920-1924

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	17	21,839,090	3,776	4,765,305	395,976	5,420,559	14,792,201
1921.....	15	41,357,161	2,694	2,657,425	318,633	2,713,440	4,906,230
1922.....	12	43,997,252	2,572	2,581,644	265,962	2,704,462	5,552,723
1923.....	14	42,715,557	3,165	3,607,178	920,826	2,524,610	7,522,506
1924.....	15	43,216,966	2,597	2,977,304	293,533	2,173,991	6,710,830

Table 274.—Capital Employed in the Asbestos Industry in Canada, 1922, 1923 and 1924

	1922	1923	1924
	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—			
Cost of lands, buildings, plant machinery and tools.....	37,291,835	36,234,918	37,286,894
Cost of supplies and stock on hand.....	2,717,312	2,965,687	2,437,151
Cash, trading and operating accounts and bills receivable.....	3,988,105	3,514,952	3,492,921
<b>Total.....</b>	<b>43,997,252</b>	<b>42,715,557</b>	<b>43,216,966</b>

Table 275.—Employees, Salaries and Wages in the Asbestos Industry in Canada, 1923 and 1924

	1923				1924			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
SALARIED EMPLOYEES—Total.....	135	9	144	\$ 353,562	115	10	125	\$ 238,459
WAGE-EARNERS:—								
Mine.....	1,651		1,651	3,253,616	1,429		1,429	2,688,845
Mill.....	1,370		1,370		1,043		1,043	
Total.....	3,021		3,021	3,253,616	2,472		2,472	2,688,845
Grand Total.....	3,156	9	3,165	3,607,178	2,587	10	2,597	2,977,304

Table 276.—Number of Wage-Earners in the Asbestos Industry in Canada by Months, 1923 and 1924

Month	1923		1924		Month	1923		1924	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
January.....	1,325	1,174	1,404	1,046	July.....	1,671	1,384	1,308	947
February.....	1,405	1,084	1,429	1,037	August.....	1,637	1,402	1,189	1,014
March.....	1,386	1,152	1,577	1,119	September.....	1,675	1,500	1,242	909
April.....	1,627	1,240	1,808	1,186	October.....	1,674	1,494	1,244	1,005
May.....	1,672	1,315	1,806	1,228	November.....	1,448	1,394	1,248	1,028
June.....	1,694	1,457	1,519	1,079	December.....	1,458	1,386	1,255	1,008
Average for 1923.....									3,021
Average for 1924.....									2,472

Table 277.—Monthly Average Prices of Asbestos by Grades, 1923 and 1924

(Price per short ton)

(Computed from quotations in the *Engineering and Mining Journal-Press*)

Month	Crude No. 1	Crude No. 2	Spinning fibres	Magnesia and compressed sheet fibres	Shingle stock	Paper stock	Cement stock	Floats stock
1923	\$	\$	\$	\$	\$	\$	\$	\$
January.....	675	375	220	150	75	38	18	10
February.....	500	300	200	150	70	35	18	10
March.....	500	292	178	133	73	37	21	11
April.....	500	288	168	125	75	39	23	12
May.....	500	288	168	125	75	39	23	12
June.....	500	288	168	125	73	39	19	11
July.....	500	275	175	125	75	38	23	10
August.....	453	275	184	125	62	39	19	10
September.....	438	275	222	115	58	37	23	11
October.....	425	275	138	93	58	35	19	10
November.....	397	225	113	75	58	35	19	9
December.....	397	225	113	75	57	35	19	9
Average.....	462	262	170	118	67	34	20	10
1924								
January.....	388	225	113	75	60	35	19	9
February.....	350	200	108	75	60	36	23	8
March.....	350	200	118	75	60	37	23	8
April.....	350	200	118	75	60	37	23	9
May.....	350	200	118	75	60	37	23	11
June.....	363	213	120	85	60	38	23	10
July.....	363	213	120	85	60	38	23	10
August.....	350	188	120	76	57	35	18	10
September.....	313	175	108	70	50	33	20	9
October.....	350	175	108	65	50	35	20	11
November.....	350	175	108	65	50	35	20	11
December.....	313	195	108	65	48	33	20	11
Average.....	349	197	114	74	56	36	21	10

## COAL

Canada's coal reserves are estimated to constitute more than 16 per cent of the world's known available supply and most of these deposits are located in the western provinces although coal of good quality has been mined in the maritime provinces for a great many years, and it is probable that operations in that field will be continued for many years to come.

In 1924 there were 520 coal mines operated in Canada, of which 351 were in Alberta, 64 in Saskatchewan, 50 in Nova Scotia, 16 in New Brunswick, 38 in British Columbia, and 1 in the Yukon.

The total capital employed by these mines amounted to \$146,711,531, of which 54.7 million dollars was invested in Nova Scotia mines; 52.7 million dollars in Alberta mines and 34.4 million dollars in British Columbia properties.

Employment in the coal-mining industry continued uncertain. During the months from April to September, the number of men employed dropped to a low level. Labour troubles in District 18, in which some of the principal coal mines of Alberta and British Columbia are located, greatly reduced the output from these mines. The bargain driven by the men in Nova Scotia proved less advantageous than was expected, and broken time offset the gains due to higher rates of pay. Seven coal mine strikes in the East occurred during the year. In these 12,691 men were involved with a total loss of time amounting to 318,993 working days. In western Canada there were eight disputes, and while only 8,523 men were affected the total loss of time amounted to 1,236,112 working days. In all there were 15 strikes, in which 21,214 men participated, losing in the aggregate 1,555,105 working days. In the preceding year while there were 25 disputes, only 20,986 men were affected and the total loss in working time amounted to only 308,430 days. In 1922 the trend in employment in coal mining was much the same as in 1924, the loss of time due to strikes in that year amounting to 1,222,288 days.

In western Canada, labour disagreements in Alberta and southeastern British Columbia largely accounted for the loss in production in this area. Unable to accept orders on which they could guarantee delivery, the companies continued to lose their cultivated markets; consumers purchased supplies from available sources, and to meet the demand, imported coal was carried into the Middle West. On the conclusion of the strike, the men returned to the mines but in a short time sufficient coal was produced to supply the diminished markets and the mines were closed. Later, a more favourable agreement was negotiated and the companies, with this advantage of lower costs, set about recovering the markets lost during the spring and summer months. Owing largely to labour troubles in the western coal mines, the average number of employees on Canadian coal mine staffs in 1924 dropped to 27,183 as compared with an average of 32,046 for the preceding year. Salaries and wages showed a fall of more than 11 million dollars to \$35,123,490 as compared with \$46,215,712 in 1923. In the eastern provinces, employment showed little variation in trend during 1924 in comparison with the records for previous years. But in the western area there was a distinctly downward trend in employment from the beginning of the year till April; during the next four months employment remained at the lowest level recorded in several years but in August and September there was some improvement and in the next three months, the number employed in this industry rose to the highest point for the year. The fluctuations in coal-mine employment as shown in the dominion total, corresponded almost exactly with the changes observed in employment in the western mines. In Nova Scotia, the average number employed during the year dropped to 12,994 as compared with 14,119 on the rolls in 1923; Alberta's average was only 7,783 as against 10,592 in the preceding year; British Columbia showed less loss at 5,203 as compared with 6,148 in the preceding year.

Closely related in point of interest to the number of employees, are the data concerning the number of days' work done and the wages paid. In 1924, excluding the salaried employees, there were 25,708 men working in the coal mines of Canada; of these 5,995 worked on the surface and 19,713 underground. Surface men worked on the average 257 days during the year; underground men, 210 days. This number divided into the total sum of wages paid during the year, showed an average earning power per man of \$5.62 per working day. In 1923, the average computed on the same basis was \$5.57 per day and in 1922 it was \$5.18.

To assist the industry, the Dominion Government made provision for the payment of a subvention of \$150,000 in order that domestic coal, particularly from the Maritime Provinces, might be marketed in central Canada. Depression in the iron and steel industry, the principal mainstay of eastern Canadian coal mines, was also a check to production.

Yet in spite of the fact that production of coal in Canada was so much lower in 1924 than in 1923, imports of foreign coal also showed a very considerable decrease. Domestic supplies of anthracite, it is true, were only slightly less in volume than before but the tonnage of bituminous coal imported showed a loss of five million tons. Industrial depression reduced the apparent consumption of coal in Canada by 6.80 million tons below the amount used in 1923.

**Table 278.—Capital Employed in the Coal Mines of Canada, as at December 15, 1924**

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
	\$	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—							
Value of buildings, plant machinery and tools.....	48,096,232	1,242,828	2,545,523	44,474,725	31,896,185	202,500	128,457,993
Cost of supplies on hand and coal on bank.....	3,108,035	43,236	59,384	1,152,713	774,181	.....	5,137,549
Cash, trading and operating accounts and bills receivable.....	3,503,977	522,290	297,913	7,075,493	1,716,316	.....	13,115,989
<b>Total.....</b>	<b>54,708,244</b>	<b>1,808,354</b>	<b>2,902,820</b>	<b>52,702,931</b>	<b>34,386,682</b>	<b>202,500</b>	<b>146,711,531</b>

**Table 279.—Number of Employees, Salaries and Wages Paid in the Coal Mines in Canada, by Provinces, 1924**

Province	Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages
	Male	Female	Surface	Under-ground			
Nova Scotia.....	467	27	2,314	10,186	12,994	\$ 905,196	\$ 12,449,708
New Brunswick.....	27	3	162	446	637	64,876	583,749
Saskatchewan.....	41	4	115	404	564	67,531	501,404
Alberta.....	598	22	1,975	5,188	7,783	1,489,215	11,008,916
British Columbia.....	265	22	1,428	3,488	5,203	671,701	7,379,084
Yukon.....	.....	.....	1	1	2	.....	2,310
<b>Canada.....</b>	<b>1,397</b>	<b>78</b>	<b>5,995</b>	<b>19,713</b>	<b>27,183</b>	<b>3,198,319</b>	<b>31,925,171</b>
							<b>35,123,490</b>

**Table 280.—Number of Wage-Earners in the Coal Mines of Canada by Months and by Provinces, 1923 and 1924**

Month	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
January.....1923	13,575	634	619	12,384	6,587	-	33,795
.....1924	13,144	603	728	12,047	5,978	-	32,500
February.....1923	13,449	657	589	11,544	6,534	-	32,773
.....1924	12,928	621	636	11,234	6,023	-	31,442
March.....1923	13,692	646	546	10,063	6,300	-	31,267
.....1924	13,253	649	537	9,814	5,682	-	29,735
April.....1923	13,580	668	432	8,624	6,074	-	29,373
.....1924	13,371	622	420	2,650	4,350	-	21,412
May.....1923	13,569	598	371	7,821	5,627	-	27,986
.....1924	13,051	629	376	2,758	4,260	-	21,074
June.....1923	13,487	615	360	8,133	5,448	-	28,043
.....1924	12,721	612	380	2,978	4,205	-	20,896
July.....1923	12,588	628	350	8,450	5,425	-	27,411
.....1924	11,587	624	327	2,879	4,234	6	19,657
August.....1923	13,255	624	361	9,084	5,586	-	28,910
.....1924	11,476	570	336	3,716	4,227	6	20,331
September.....1923	13,393	553	402	9,686	5,647	2	29,683
.....1924	11,753	585	386	4,911	4,314	6	21,955
October.....1923	13,516	554	599	10,693	5,696	-	31,058
.....1924	12,199	577	574	10,078	5,180	-	28,608
November.....1923	13,209	565	748	11,203	5,819	-	31,544
.....1924	12,317	598	757	11,090	5,039	-	29,801
December.....1923	13,318	611	692	11,310	5,825	-	31,756
.....1924	12,201	613	766	12,008	5,503	-	31,091
<b>Average.....1923</b>	<b>13,385</b>	<b>612</b>	<b>595</b>	<b>9,917</b>	<b>5,881</b>	<b>2</b>	<b>30,300</b>
<b>.....1924</b>	<b>12,500</b>	<b>608</b>	<b>519</b>	<b>7,163</b>	<b>4,918</b>	<b>2</b>	<b>25,708</b>

Table 281.—Average Number of Wage-Earners, in the Coal Mines of Canada, by Classes and by Provinces, 1924

Classification	Province						Canada		
	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Surface	Under-ground	Total
<b>SURFACE—</b>									
Administration.....	91	13	11	124	31		227	43	270
Foremen and clerks.....	157	24	19	200	118		494	24	513
Screenmen and loaders.....	601	35	37	462	155		1,286	4	1,290
<b>UNDERGROUND—</b>									
Officials.....	422	2	7	293	151		18	862	880
Hand cutters and helpers.....	1,909	429	284	1,905	1,554	2	21	6,062	6,983
Machine cutters.....	1,433	4	10	303	46			1,801	1,801
Machine loaders and helpers.....	1,645	1	23	1,084	88		2	2,839	2,841
Horse haulage employees.....	822	3	47	559	378		30	1,773	1,803
Mechanical haulage employees.....	1,521		3	207	352		31	2,055	2,066
Ventilation employees.....	343		1	70	67		4	477	481
Roadmakers.....	301		12	148	67		2	526	528
Timbermen.....	608	11	4	253	139		13	1,002	1,015
Pumpmen.....	132	5	7	48	37		14	215	229
<b>MISCELLANEOUS—</b>									
Enginemen.....	243	11	13	157	79		477	26	503
Firemen.....	202	3	11	104	52		372		372
Machinists.....	256	2	2	63	75		395	3	398
Carpenters and masons.....	111	4	4	62	79		258	2	260
Other mechanics.....	222	3	2	96	119		293	149	442
All other white employees.....	1,481	58	22	1,015	736		1,752	1,560	3,312
Japanese.....					116		1	115	116
Chinese.....					497		305	192	497
Indians.....					3			3	3
<b>Total.....</b>	<b>12,500</b>	<b>608</b>	<b>519</b>	<b>7,163</b>	<b>4,916</b>	<b>2</b>	<b>5,995</b>	<b>19,713</b>	<b>25,708</b>

Table 282.—Number of Wage-Earners, Work Done by Months, and Wages Paid in the Coal Mines of Canada, 1924

Month	Number of employees			Days' work done			Total wages
	Surface	Under-ground	Total	Surface	Under-ground	Total	
January.....	7,568	24,932	32,500	161,056	427,142	588,198	Monthly records not available
February.....	7,371	24,071	31,442	143,541	351,419	494,960	
March.....	6,961	22,764	29,735	156,037	447,179	603,216	
April.....	5,054	16,359	21,413	114,766	329,682	444,448	
May.....	4,997	16,077	21,074	103,122	253,774	356,896	
June.....	4,907	15,989	20,896	105,141	264,899	370,040	
July.....	4,588	15,069	19,657	96,707	259,716	356,423	
August.....	4,846	15,485	20,331	111,386	248,492	359,878	
September.....	5,259	16,696	21,955	109,710	289,903	399,613	
October.....	6,629	21,979	28,608	137,387	394,239	531,626	
November.....	6,744	23,057	29,801	149,827	441,288	591,115	
December.....	7,009	24,082	31,091	153,635	431,094	584,729	
<b>Total.....</b>				<b>1,542,315</b>	<b>4,138,827</b>	<b>5,681,142</b>	<b>\$ 31,925,171</b>
<b>Average.....</b>	<b>5,995</b>	<b>19,713</b>	<b>25,708</b>	<b>257 days per year</b>	<b>210 days per year</b>	<b>221 days per year</b>	<b>\$ 5.62 per day</b>

Table 283.—Power Employed in the Coal Mines of Canada, by Provinces, 1924

Class	Nova Scotia		New Brunswick		Saskatchewan		Alberta		British Columbia		Canada	
	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated
Stationary engines (including those used for hoisting, pumping, etc.):—												
Steam engines and turbines.....	423	69,772	13	513	35	1,798	297	34,031	119	20,358	887	126,472
Gas engines.....					2	11	8	67			10	78
Oil and gasoline engines.....	3	26			3	8	49	332	4	81	59	447
Hydraulic turbines or water wheels.....									6	12,000	6	12,000
Electric motors:—												
Operated by power generated by the establishment.....	367	31,703	8	160	17	462	213	5,924	183	13,213	788	51,462
Operated by purchased power.....	51	1,878			4	20	274	12,267	13	782	345	14,947
Boilers installed.....	193	B.H.P. 43,207	7	B.H.P. 515	11	B.H.P. 1,300	209	B.H.P. 26,838	93	B.H.P. 13,881	513	B.H.P. 85,741
Electric power used during the year												
Quantity in kilowatt-hours.....		57,215,219		1,140,000		47,500		14,030,132		21,896,003		94,328,944
Value.....		\$ 738,205		\$ 29,938		\$ 958		\$ 295,707		\$ 321,314		\$ 1,386,122

## FELDSPAR

The first record of production in the feldspar industry in Canada dates back to about the year 1890. The production during that year was approximately 700 tons and since that date the records show an increase until in 1924, 44,804 tons were produced.

The initial development work in this industry was made on deposits located in Templeton and Hull townships, in the province of Quebec. In the townships of Bedford and Portland, Ontario, near Bedford and Verona, development work was started on large feldspar deposits in the year 1900. The activities of these Ontario feldspar properties during the next few years, owing to their proximity to the American market (potteries located in New Jersey), were responsible for the almost complete cessation of work on Quebec deposits. A small quantity of high-grade dental spar has been produced from the Villeneuve quarry in Portland township, Quebec, for a number of years.

Plants for the fine-grinding of feldspar in Canada are located at Kingston, Toronto and Oshawa; the first two establishments were operated during 1924 producing about 2,200 tons of ground spar. The grinding capacity of these two plants is approximately 7,500 tons per annum.

Although feldspar occurs in many deposits throughout Canada, operations in this industry in 1924 were confined to the provinces of Ontario and Quebec. With the exception of some 2,100 tons used for domestic purposes, the entire Canadian output was shipped to United States grinding plants in the form of crude spar for use in the ceramic industry.

Twenty-five firms reported operations in 1924, comprising 8 in Quebec and 17 in the province of Ontario.

Table 284.—Principal Statistics of the Feldspar Industry in Canada, 1920-1924.

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	20	(*)	277	152,379	(*)	(*)	280,895
1921.....	23	484,633	143	146,776	4,237	55,628	230,754
1922.....	25	388,310	225	127,182	5,231	60,829	248,402
1923.....	25	948,973	298	193,001	13,965	55,542	237,601
1924.....	25	953,525	290	223,937	16,866	*	358,540

(\*) Data not available.

Table 285.—Capital Employed in the Feldspar Industry in Canada, 1923 and 1924

	1923	1924
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY:		
Cost of lands, buildings, plant machinery and tools.....	897,047	890,337
Cost of supplies and stock on hand.....	35,418	38,534
Cash, trading and operating accounts and bills receivable.....	16,508	24,654
<b>Total.....</b>	<b>948,973</b>	<b>953,525</b>

Table 286.—Employees, Salaries and Wages in the Feldspar Industry in Canada, 1923 and 1924

Year	Number			Salaries and wages
	Male	Female	Total	
SALARIED EMPLOYEES—Total.....				\$
1923.....	16	1	17	23,973
1924.....	9	1	10	20,580
WAGE-EARNERS—Total.....				
1923.....	281		281	169,028
1924.....	280		280	203,357
<b>Grand total.....</b>	<b>297</b>	<b>1</b>	<b>298</b>	<b>193,001</b>
	289	1	290	223,937

Table 287.—Number of Wage-Earners in the Feldspar Industry in Canada, by Months, 1923 and 1924

Month	Number		Month	Number	
	1923	1924		1923	1924
January.....	199	218	July.....	242	298
February.....	230	205	August.....	282	276
March.....	214	191	September.....	249	240
April.....	186	176	October.....	239	251
May.....	210	247	November.....	238	220
June.....	276	279	December.....	182	166
<b>Average for 1923.....</b>					<b>281</b>
<b>Average for 1924.....</b>					<b>280</b>

## GYPSUM

The first record of the production of gypsum in Canada shows that in 1822 minor operations, consisting of the extraction of a few tons of this commodity for use as fertilizer, were conducted on a bed of gypsum near Paris, Ontario. The first mill for manufacturing gypsum was erected in 1823. Since that date operations in this district have been carried on almost continuously. At the present time the Ontario Gypsum Company, operating at Lythmore and Caledonia is the only producer.

Prior to 1833, activities in the gypsum industry in Nova Scotia consisted principally of minor operations carried on by individual producers. The crude material was shipped to mills located in the United States. Several attempts were made by local producers to work up the crude rock, but these were not successful owing to the almost total dependence on the American market. When the United States duty was made prohibitive, all local milling operations ceased. During 1924, fine ground gypsum was produced in Nova Scotia only by the Windsor Plaster Company of Windsor.

The centre of activities in the gypsum industry in New Brunswick is near Hillsborough, Albert County. Operations have been carried on in this district since 1847. In 1854 there was a change in the ownership of the quarries, and shortly after this date a plaster mill was erected to supply both local and American consumers. At the present time two companies are carrying on extensive operations in this district.

Developments in the gypsum industry in Manitoba are of comparatively recent date, the year 1901 marking the first active intensive work on deposits in the province. The Manitoba Union Mining Company in that year erected a crushing and calcining mill at the head of Portage Bay on Lake Manitoba.

The principal gypsum deposits operated in Canada during 1924 were located in the following centres: Hants and Victoria counties, Nova Scotia; Albert county, New Brunswick; Haldimand county, Ontario; Gypsumville, Manitoba; and in the Lillooet District, British Columbia.

Of the nine firms producing gypsum in the Maritime provinces, five were controlled by American capital. The output of these five mines was exported in the raw form to the United States, for treatment in the manufacturing plants owned by the same interests. The output from the other mines was quarried and calcined principally for consumption in Canada.

In Ontario and Manitoba the raw gypsum was used mainly in the manufacture of cement, wall plaster, wall-board, fire-proof tile and blocks, and plaster of paris. The British Columbia product was sold as land plaster for agricultural purposes.

Comparative figures for the capital employed by operating gypsum companies in 1923 and 1924 are shown in the following table. Owing to the fact that there was only one operator in Ontario, one in Manitoba, and one in British Columbia, statistics regarding the companies in these provinces have been combined.

Table 288.—Principal Statistics of the Gypsum Industry in Canada, 1920-1924

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	11	*	1,016	955,602	*	*	1,893,991
1921.....	11	3,849,776	1,039	774,551	116,554	565,839	1,785,538
1922.....	13	4,092,090	1,055	909,072	127,246	436,705	2,160,898
1923.....	15	4,249,628	1,225	1,017,556	190,906	552,990	2,243,100
1924.....	14	4,423,697	1,219	1,114,468	141,818	458,268	2,208,103

\*Data not available.

Table 289.—Capital Employed in the Gypsum Industry in Canada by Provinces, 1923 and 1924

	1923				1924			
	Nova Scotia	New Brunswick	Ontario, Manitoba and British Columbia	Canada	Nova Scotia	New Brunswick	Ontario, Manitoba and British Columbia	Canada
	\$	\$	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—								
Cost of lands, buildings, plant machinery and tools.....	1,423,491	465,461	1,283,554	3,172,506	1,099,854	444,364	1,356,767	3,800,985
Cost of all materials and supplies on hand.....	131,507	97,088	145,609	374,204	168,500	94,335	126,771	389,606
Cash, trading and operating accounts and bills receivable.....	406,225	36,942	259,751	702,918	51,586	30,553	150,967	233,106
Total.....	1,961,223	599,491	1,688,914	4,249,628	2,219,940	569,252	1,634,505	4,423,697

**Table 290.—Employees, Salaries and Wages in the Gypsum Industry in Canada, 1923 and 1924**

	1923				1924			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
<b>SALARIED EMPLOYEES—</b>				\$				\$
Total.....	48	9	57	111,073	49	9	58	126,306
<b>WAGE-EARNERS—</b>								
Mine.....	805		805	906,483	913		913	988,162
Mill.....	363		363		248		248	
Total.....	1,168		1,168	906,483	1,161		1,161	988,162
<b>Grand total.....</b>	<b>1,216</b>	<b>9</b>	<b>1,225</b>	<b>1,017,556</b>	<b>1,210</b>	<b>9</b>	<b>1,219</b>	<b>1,114,468</b>

**Table 291.—Average Number of Wage-Earners in the Gypsum Industry in Canada by Provinces, 1924**

Month	Nova Scotia		New Brunswick		Ontario		Manitoba		Canada	
	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill
January.....	440	35	68	72	65	62	5	30	578	199
February.....	425	36	73	65	69	60	5	43	572	204
March.....	447	40	73	71	90	73	15	49	625	233
April.....	510	41	106	68	72	80	18	64	706	253
May.....	710	48	174	73	75	71	18	64	977	256
June.....	785	54	155	70	80	67	19	66	1,039	257
July.....	724	54	130	72	98	87	19	64	971	277
August.....	628	55	95	73	113	91	16	64	852	283
September.....	628	54	123	73	111	68	17	65	879	260
October.....	772	54	75	74	97	67	19	64	963	259
November.....	641	46	56	70	81	70	16	37	794	223
December.....	449	40	66	66	65	70	26	35	606	211
<b>Average.....</b>	<b>707</b>	<b>51</b>	<b>106</b>	<b>71</b>	<b>84</b>	<b>72</b>	<b>16</b>	<b>54</b>	<b>913</b>	<b>248</b>

**MICA**

Increased activity noted in the mica industry in Canada during 1923, continued throughout 1924. Large quantities of scrap mica were shipped to the United States to be ground for use in the manufacture of prepared roofings. According to a survey made in 1922, the consumption of mica by Canadian industries in that year, was as follows: roofing materials, 359 tons; wall paper, 200 tons; electrical goods 31 tons; and rubber, 22 tons.

Important deposits of mica in Canada are located in the counties of Hull and Labelle in Quebec, and Lanark, Leeds and Frontenac in Ontario. The product of these mines, in the main part, is shipped first to mica trimming shops, conveniently located, where it is either rough-cobbed or split and trimmed prior to exportation to the United States or Great Britain.

Fifty operators in Canada reported shipments of mica during 1924. Of this number 30 were in Quebec, and 20 in Ontario.

Statistics relating to the extensive mica-trimming shops in Ontario and Quebec have not been included in this report, but have been treated under a separate heading in the report on "Manufactures of Non-Metallic Minerals."

Table 292.—Principal Statistics of the Mica Industry in Canada, 1920-1924

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	20	(a)	186	145,247	(a)	(a)	376,022
1921.....	20	576,237	104	74,432	4,354	19,743	70,063
1922.....	20	441,802	147	64,641	1,807	45,825	152,263
1923.....	33	223,650	219	112,469	4,772	60,216	326,974
1924.....	50	249,876	223	127,201	5,532	(a)	357,272

(a) Data not available.

Table 293.—Capital Employed in the Mica Mining Industry in Canada by Provinces, 1923 and 1924

	1923			1924		
	Quebec	Ontario	Canada	Quebec	Ontario	Canada
	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—						
Cost of lands, buildings, plant machinery and tools.....	49,100	25,676	74,776	20,621	32,078	61,699
Cost of all materials and supplies on hand...	20,847	46,652	67,499	49,003	67,822	116,825
Cash, trading and operating accounts and bills receivable.....	43,740	37,635	81,375	45,759	25,593	71,352
<b>Total.....</b>	<b>113,687</b>	<b>109,963</b>	<b>223,650</b>	<b>124,383</b>	<b>125,493</b>	<b>249,876</b>

Table 294.—Number of Wage-Earners, by Months, and Wages Paid in the Mica Industry in Canada, 1923 and 1924

Month	Number		Month	Number	
	1923	1924		1923	1924
January.....	133	192	July.....	223	196
February.....	141	175	August.....	249	179
March.....	150	177	September.....	252	155
April.....	153	192	October.....	232	130
May.....	204	198	November.....	230	142
June.....	234	199	December.....	210	146
Average for 1923.....					212
“ 1924.....					220
<b>Total wages paid in 1923.....</b>				<b>\$</b>	<b>103,022</b>
<b>Total wages paid in 1924.....</b>				<b>\$</b>	<b>124,668</b>

## NATURAL GAS

No records are available prior to 1892, as to the production of natural gas in Canada. An estimate of the value of gas produced during that year placed the total at \$150,000.

The extensive developments of the oilfields in Ontario made available for consumption large quantities of natural gas. From 1892 to 1902 inclusive, Ontario was the only contributor of this commodity. In 1903, the first production from other provinces was recorded. The value of natural gas produced during 1903 was approximately \$202,000 and from that year onward, there was an annual increase in production until in 1917, the grand total value was \$5,045,298. From that date until 1922, considerable decreases in valuation were recorded.

The producing fields in Alberta, during 1924 were, the Medicine Hat; Bow Island (about 40 miles west of Medicine Hat); Viking field (80 miles southeast of Edmonton) and the Turner Valley field (35 miles southeast of Calgary). The total number of wells reported as producing at the end of the year was 70, as compared with 63 wells reported active in 1923.

The producing wells in the province of New Brunswick are confined to the Stony Creek field in Albert county, about eight miles south of Moncton. The natural gas produced is used largely for power, domestic heating and lighting purposes in Moncton. At the end of 1924 there were 26 wells in operation, 5 more than were reported active at the beginning of the year.

Table 295.—Principal Statistics of the Natural Gas Industry in Canada, 1920-1924

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$
1920.....	104	1,954	(a)	616	643,320	(a)	4,232,642
1921.....	103	2,021	30,368,478	885	882,907	1,405,222	4,594,164
1922.....	132	1,981	31,373,817	921	939,194	1,458,675	5,846,501
1923.....	192	2,060	38,722,854	867	1,050,366	1,789,097	5,884,613
1924.....	186	2,031	50,561,757	1,240	1,315,405	(a)	5,708,636

(a) Data not available.

Table 296.—Capital Employed in the Natural Gas Industry in Canada by Provinces, 1923 and 1924

	1923				1924			
	New Brunswick	Ontario	Alberta	Canada	New Brunswick	Ontario	Alberta	Canada
	\$	\$	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—								
Cost of lands, buildings, plant machinery and tools.....		22,167,954	12,095,436	34,263,390		22,279,988	22,026,163	44,306,151
Cost of all materials and supplies on hand.....		372,100	371,377	743,477		369,970	531,612	901,582
Cash, trading and operating accounts and bills receivable.....		3,030,918	423,458	3,454,376		2,131,765	2,960,648	5,092,413
<b>Total.....</b>	<b>261,611</b>	<b>25,570,972</b>	<b>12,899,271</b>	<b>38,722,854</b>	<b>261,611</b>	<b>24,781,723</b>	<b>25,518,423</b>	<b>50,561,757</b>

Table 297.—Employees, Salaries and Wages in the Natural Gas Industry in Canada, 1923 and 1924

	1923				1924			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES—Total.....	136	60	196	287,074	395	65	460	503,461
WAGE-EARNERS—Total.....	671	.....	671	763,292	780	.....	780	811,944
<b>Grand total.....</b>	<b>807</b>	<b>60</b>	<b>867</b>	<b>1,050,366</b>	<b>1,175</b>	<b>65</b>	<b>1,240</b>	<b>1,315,405</b>

Table 298.—Number of Wage-Earners in the Natural Gas Industry in Canada, by Months and by Provinces, 1924

Month	New Brunswick	Ontario	Alberta	Canada
January.....	23	296	285	604
February.....	8	280	277	565
March.....	9	275	286	570
April.....	29	283	349	661
May.....	38	309	419	766
June.....	38	372	431	841
July.....	35	435	519	989
August.....	32	439	527	998
September.....	32	395	460	887
October.....	36	393	400	829
November.....	32	397	411	840
December.....	27	333	351	711
<b>Average.....</b>	<b>28</b>	<b>355</b>	<b>397</b>	<b>780</b>

Table 299.—Number of Gas Wells in Canada, by Provinces, 1923 and 1924

	New Brunswick	Ontario	Manitoba	Alberta	Canada
Productive wells at beginning of year.....1923	19	1,901	1	60	1,981
.....1924	21	1,975	1	63	2,060
Number of productive wells drilled.....1923	1	90	.....	2	93
.....1924	5	62	.....	9	76
Number of dry wells drilled.....1923	.....	24	.....	.....	24
.....1924	.....	20	.....	.....	20
Number of wells abandoned.....1923	.....	68	.....	2	70
.....1924	.....	83	.....	.....	83
Productive wells at end of year.....1923	21	1,975	1	63	2,060
.....1924	26	1,934	1	70	2,031

Table 300.—Natural Gas Wells in Ontario, by Townships, 1924

Township	No. of producing wells in operation Dec. 31, 1924	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Amabel.....	2	.....	.....	.....
Bayham.....	52	4	.....	.....
Bertie.....	91	.....	1	3
Binbrook.....	63	3	.....	.....
Caledon E.....	3	1	1	.....
Caistor.....	46	2	.....	.....
Canboro.....	158	5	.....	.....
Cayuga, North.....	56	6	2	5
Cayuga, South.....	58	.....	.....	.....
Charlotteville.....	16	.....	.....	.....
Crowland.....	50	.....	1	1
Dawn.....	5	.....	.....	.....
Dorchester, North.....	3	.....	.....	.....
Dover, West.....	8	1	.....	.....
Dunn.....	14	.....	.....	.....
Enniskillen.....	3	.....	.....	.....
Euphemia.....	6	.....	.....	.....
Gainsboro.....	2	.....	.....	.....
Glanford.....	26	1	.....	.....
Gosfield.....	7	.....	1	3
Harwich.....	29	.....	.....	.....
Houghton.....	3	.....	.....	.....
Howard.....	33	.....	.....	.....
Humberstone.....	99	4	1	1
Mersea.....	4	.....	.....	.....
Middleton.....	19	.....	.....	2
Malahide.....	2	2	.....	.....
Moulton.....	113	2	.....	10
Oakland.....	1	.....	2	1
Oneida.....	33	1	2	1
Onondaga.....	43	.....	.....	.....
Rainham.....	100	9	.....	.....
Raleigh.....	20	2	.....	.....
Romney.....	103	4	.....	7
Sarnia.....	14	.....	.....	.....
Seneca.....	177	8	3	10
Sherbrooke.....	12	1	.....	.....
Tilbury, East.....	139	3	2	5
Wainfleet.....	49	3	.....	.....
Walpole.....	156	14	1	11
Walsingham, North.....	6	.....	.....	.....
Walsingham, South.....	7	1	.....	.....
Windham.....	4	.....	.....	.....
Willoughby.....	39	2	.....	.....
Woodhouse.....	60	4	2	2
Total.....	1,934	33	20	62

PETROLEUM

The production of petroleum in Canada dates back to 1857 when a shallow well was dug near Enniskillen (now known as Oil Springs), in the province of Ontario. Early in January, 1862, a pioneer oil prospector brought in the first flowing well at Oil Springs, Ontario, and

before the fall of the same year there were approximately 35 producing wells in operation. According to available information some of these wells produced from 3,000 to 6,000 barrels per day.

In 1865, Petrolia came into existence as a large producer and since that date has maintained its position among the leading oil-fields in Canada. Prior to this discovery, oil deposits were located in Kent County, at Bothwell. Although Petrolia, Oil Springs and Bothwell are by far the oldest producing fields in Canada, these three fields continue to rank as the premier producers in this country.

On December 31, 1924, there were 2,456 wells in operation in Ontario, while at the close of the previous year, 2,681 wells were active.

The outstanding feature of this industry in Ontario during 1923 was the bringing in of an oil well in Romney Township on the shore of Lake Erie. In 1924, the production from this well amounted to approximately 3,000 barrels. The importance of this well is that it lies in the Trenton group. Production from the Trenton group has made the neighbouring state of Ohio one of the large producers of petroleum and natural gas in America. Heretofore, this formation had not been explored to any extent in Ontario.

The first attempt to develop the oil deposits in Westmoreland County in New Brunswick, was made in 1859. The four wells drilled then were not successful as fresh water seeped in, ruining them. No further drilling was attempted until 1879, then two more wells were sunk, one at St. Joseph and the other at Dover. From 1900 to 1906 some 72 wells were drilled, as follows: 67 in Westmoreland county, 4 in Albert county and 1 in Kent county. This marked the opening up of the present Stony Creek oil and gas field. Fourteen petroleum wells were in operation in this district on December 31, 1924.

In May, 1914, considerable interest was taken in the Turner Valley oil field in Alberta. The centre of this field is about 25 miles south of Calgary. In 1924 only 3 companies, operating 3 petroleum wells reported production in this district.

The new oil fields in the Mackenzie district of the Northwest Territories have been the scene of considerable activity during the past several years. Drilling operations were begun in this district, about 40 miles below Fort Norman, early in 1920.

In the Coutts-Sweetgrass district, southern Alberta, a number of companies continued drilling operations throughout 1924, although no production was reported.

Data regarding wells located in New Brunswick have been included in the section on "Natural Gas."

**Table 301.—Principal Statistics of the Petroleum Industry in Canada, 1920-1924**

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$
1920.....	122	3,027	(a)	202	182,787	(a)	822,235
1921.....	120	3,009	3,214,159	190	215,791	136,277	641,533
1922.....	120	2,880	2,764,099	160	167,176	116,678	611,176
1923.....	117	2,694	2,934,213	151	118,231	79,019	522,018
1924.....	119	2,473	5,650,086	158	152,957	(a)	467,400

(a) Data not available.

**Table 302.—Capital Employed in the Petroleum Industry in Canada, by Provinces, 1923 and 1924**

	1923			1924		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
	\$	\$	\$	\$	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>						
Cost of lands, buildings, plant machinery and tools.....	2,023,414	771,715	2,795,129	2,011,173	3,530,922	5,542,095
Cost of all materials and supplies on hand....	21,016	27,992	49,008	24,883	15,497	40,380
Cash, trading and operating accounts and bills receivable.....	64,035	26,041	90,076	33,135	34,476	67,611
<b>Total.....</b>	<b>2,108,465</b>	<b>825,748</b>	<b>2,934,213</b>	<b>2,069,181</b>	<b>3,580,895</b>	<b>5,650,086</b>

**Table 303.—Employees, Salaries and Wages in the Petroleum Industry in Canada, by Provinces, 1923 and 1924**

	1923			1924		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
<b>SALARIED EMPLOYEES—</b>						
Total.....No.	14	3	17	24	5	29
Salaries.....\$	16,456	3,613	20,069	18,046	6,190	24,236
<b>WAGE-EARNERS—</b>						
Total.....No.	130	4	134	110	19	129
Wages.....\$	95,032	3,130	98,162	89,590	39,131	128,721
<b>Grand total.....No.</b>	<b>144</b>	<b>7</b>	<b>151</b>	<b>134</b>	<b>24</b>	<b>158</b>
Salaries and wages.....\$	111,488	6,743	118,231	107,636	45,321	152,957

**Table 304.—Monthly Average Number of Wage-Earners in the Petroleum Industry in Canada, by Provinces, 1923 and 1924**

Month	1923			1924		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
January.....	108	3	111	98	25	123
February.....	109	2	111	103	23	126
March.....	111	2	113	107	35	142
April.....	110	2	112	108	25	133
May.....	115	5	120	111	24	135
June.....	117	4	121	110	18	128
July.....	122	4	126	112	17	129
August.....	123	4	127	113	15	128
September.....	113	4	122	120	11	131
October.....	113	2	115	116	7	123
November.....	108	3	111	108	5	113
December.....	105	2	107	108	5	113
<b>Average.....</b>	<b>130</b>	<b>4</b>	<b>134</b>	<b>110</b>	<b>19</b>	<b>129</b>

**Table 305.—Petroleum Wells in Canada, 1923 and 1924**

		New Brunswick	Ontario	Alberta	Canada
Productive wells at beginning of year.....	1923	9	2,867	4	2,880
	1924	9	2,681	4	2,694
Number of productive wells drilled.....	1923		15		15
	1924	4	9		13
Number of wells abandoned.....	1923		11		11
	1924		58		58
Number of productive wells at end of year.....	1923	9	2,681	4	2,694
	1924	14	2,456	3	2,473

**SALT**

The production of salt in the province of Ontario was first recorded in 1866 when a company was formed to drill for oil on the north bank of the Maitland river, and, while no success attended the efforts of the drillers in their search for oil, a bed of rock salt was found at a depth of 964 feet. In September, 1866, this company (incorporated under the name of the Goderich Petroleum Company, later changed to "Goderich Salt Company") commenced pumping brine. In the initial working in connection with these deposits the refining was done by the kettle method, which was soon discarded and replaced by the pan method of evaporation.

Wells were drilled and plants erected at Clinton and Seaforth, Ontario, and four refineries were in operation at Goderich in 1879; at the present time there are only two firms operating at Goderich.

In 1924, wells were operated in Ontario at Windsor, Sandwich, Courtright, Exeter, Goderich, Kincardine, Sarnia, Warwick, Wingham and in Anderdon township. Mining of rock salt was carried on by one firm in Nova Scotia, at Malagash, Cumberland County.

For the whole of Canada, eleven firms, operating twelve salt works, reported activity during 1924. Two of these plants were engaged primarily in the production of brine for use in the manufacture of caustic soda and soda ash in the chemical works of the producing companies.

**Table 306.—Principal Statistics of the Salt Industry in Canada, 1920-1924**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	12	2,221,606	345	472,031	531,880	409,493	1,544,724
1921.....	12	2,267,708	277	411,832	527,013	381,126	1,673,685
1922.....	10	2,205,184	371	432,261	369,000	407,105	1,628,323
1923.....	11	2,406,992	368	412,597	356,794	404,046	1,713,516
1924.....	11	2,479,563	364	431,618	342,118	424,578	1,374,780

**Table 307.—Capital Employed in the Salt Industry in Canada, 1923 and 1924**

	1923	1924
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	1,545,576	1,584,581
Cost of all materials and supplies on hand.....	278,106	247,412
Cash, trading and operating accounts and bills receivable.....	583,310	647,570
<b>Total.....</b>	<b>2,406,992</b>	<b>2,479,563</b>

**Table 308.—Employees, Salaries and Wages in the Salt Industry in Canada, 1923 and 1924**

	1923				1924			
	Number of employees		Total	Salaries and wages	Number of employees		Total	Salaries and wages
	Male	Female			Male	Female		
<b>SALARIED EMPLOYEES—</b>				\$				\$
Total.....	37	15	52	103,227	37	14	51	113,740
<b>WAGE-EARNERS—</b>								
Total.....	292	24	316	309,370	278	35	313	317,878
<b>Grand total.....</b>	<b>329</b>	<b>39</b>	<b>368</b>	<b>412,597</b>	<b>315</b>	<b>49</b>	<b>364</b>	<b>431,618</b>

**Table 309.—Number of Wage-Earners in the Salt Industry in Canada, by Months, 1923 and 1924**

Month	1923		1924		Month	1923		1924	
	Male	Female	Male	Female		Male	Female	Male	Female
January.....	253	24	227	24	July.. .....	307	24	300	34
February.....	265	26	243	29	August.....	253	25	283	38
March.....	260	24	260	28	September....	292	25	287	38
April.....	283	23	300	27	October.....	305	25	273	37
May.....	300	23	303	29	November....	306	24	279	37
June.....	278	25	291	29	December....	275	22	264	33

## MISCELLANEOUS NON-METALLIC MINERAL INDUSTRIES

Table 310.—Capital Employed in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1923 and 1924

Industry	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, plant machinery and tools	Cost of all materials and supplies, on hand	Cash, trading and operating accounts and bills receivable	Total	Lands, buildings, plant machinery and tools	Cost of all materials and supplies on hand	Cash, trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Graphite.....					561,354	72,477	14,116	647,947
Grindstones.....	96,567	29,633	33,889	160,094	86,073	26,073	43,949	156,095
Iron oxides.....	176,253	32,527	560	209,340	151,546	31,527	10,560	193,633
Magnesite*.....	1,706,874	127,186	53,198	1,887,258				
Quartz.....	940,934	87,202	16,300	1,044,436	887,590	97,943	6,330	991,863
Talc.....	509,693	29,020	140,624	679,337	522,368	33,294	140,124	695,786
Other non-metallics <sup>1</sup> .....	3,093,438	356,528	25,461	3,475,427	2,152,035	260,342	16,242	2,428,619
<b>Total.....</b>	<b>6,523,779</b>	<b>662,101</b>	<b>270,032</b>	<b>7,455,912</b>	<b>4,360,966</b>	<b>521,656</b>	<b>231,321</b>	<b>5,113,943</b>

\*Included with "Other Non-Metallics," in 1924.

<sup>1</sup> Includes actinolite, alunite, barytes, corundum, fluorspar, garnets, graphite, magnesium sulphate, mineral waters, pyrites, sodium carbonate, sodium sulphate, tripolite, and volcanic ash.<sup>2</sup> Graphite taken separately in 1924.

Table 311.—Employees, Salaries and Wages in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1923 and 1924

	1923					1924				
	Super-intendents and managers	Technical employees	Clerks and stenographers	Wage-earners and wages	Total	Super-intendents and managers	Technical employees	Clerks and stenographers	Wage-earners and wages	Total
Graphite <sup>3</sup> .....	No.					3		2	70	75
Salaries \$						7,800		2,700	44,949	55,449
Grindstones.....	No.	5	1	56	62	5		1	70	76
Salaries \$	12,000		2,000	36,200	50,200	12,000		2,000	50,312	64,312
Iron oxides.....	No.	1	2	57	60	1			37	38
Salaries \$	3,000		2,500	43,556	49,056	3,000			30,221	33,221
Magnesite*.....	No.	4	2	5	63					
Salaries \$	8,110	3,217	6,129	90,475	107,931					
Quartz.....	No.	6	1	4	267	4	2	3	148	157
Salaries \$	20,497	5,000	3,140	255,552	284,189	9,134	6,900	5,000	134,828	155,862
Talc.....	No.	4	1	3	52			1	3	61
Salaries \$	8,400	1,800	2,700	46,421	59,321	8,115	1,300	4,510	45,295	59,220
Other non-metallics <sup>1</sup> ...	No.	13	6	9	159	9		6	124	139
Salaries \$	26,425	5,299	9,496	109,237	150,457	16,915		4,830	61,192	82,937
<b>Total.....</b>	<b>No.</b>	<b>33</b>	<b>10</b>	<b>24</b>	<b>654</b>	<b>26</b>	<b>3</b>	<b>15</b>	<b>502</b>	<b>546</b>
<b>Salaries \$</b>	<b>78,432</b>	<b>15,316</b>	<b>25,965</b>	<b>581,441</b>	<b>701,154</b>	<b>56,964</b>	<b>8,200</b>	<b>19,040</b>	<b>366,797</b>	<b>451,001</b>

\*Included with "Other Non-Metallics," in 1924.

<sup>1</sup> Includes actinolite, alunite, barytes, corundum, fluorspar, garnets, graphite, magnesium sulphate, manganese mineral waters, pyrites, sodium carbonate, sodium sulphate, tripolite and volcanic ash.<sup>2</sup> Manganese is taken with metallics in 1924.<sup>3</sup> Graphite is shown separately in 1924.

Table 312.—Number of Wage-Earners, by Months, in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1924

Month	Graphite	Grind-stones	Iron-oxides	Quartz	Talc	Other non-metallics	Total
January.....	45	4	21	72	30	78	250
February.....	42	5	22	71	29	74	243
March.....	55	5	26	127	42	77	332
April.....	56	23	20	134	45	64	342
May.....	60	84	42	153	51	63	453
June.....	62	123	34	161	63	117	560
July.....	61	145	36	140	50	69	501
August.....	87	120	36	119	57	78	497
September.....	69	82	36	129	58	67	441
October.....	53	73	37	128	57	75	423
November.....	22	47	38	75	58	70	310
December.....	24	17	30	66	46	63	246
Average.....	70	70	37	148	53	124	502

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

## CEMENT.

Portland cement was produced in Canada during 1924 by 6 companies operating 10 plants with a total daily capacity of 34,200 barrels. In addition to these, there were 10 other cement mills equipped and available for the manufacture of this product.

According to statistics compiled for 1921, the cement industry is controlled almost entirely by Canadian capital. Of the total par value of all securities outstanding in 1921, approximately 86.5 per cent was owned in Canada; 10.6 per cent in Great Britain, 1.9 per cent in United States, and the balance in other countries.

The essential elements entering into the production of Portland cement are lime, silica and alumina. These materials are found in limestone and clay, the Trenton variety of limestone being used principally. Puzzolan cement was produced from blast furnace slag by the Dominion Iron and Steel Company in 1921 but since that date this firm's cement mill has not been in operation.

Table 313.—Principal Statistics of the Cement Industry in Canada, 1920-1924

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	13	44,941,686	2,301	3,757,641	3,457,796	1,738,152	14,798,070
1921.....	14	49,160,180	2,751	3,443,884	2,788,820	2,602,029	14,195,143
1922.....	11	41,573,737	1,753	2,315,240	2,457,456	2,976,152	15,438,481
1923.....	10	38,284,494	1,842	2,551,784	2,809,414	2,947,242	15,064,661
1924.....	10	36,766,574	1,837	2,531,622	2,872,711	1,524,158	13,398,411

Table 314.—Capital Employed in the Cement Industry in Canada, 1923 and 1924

	1923	1924
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, plant, machinery and tools.....	33,922,549	32,467,170
Cost of materials and supplies on hand.....	2,931,641	2,897,251
Cash, trading and operating accounts and bills receivable.....	1,430,304	1,402,153
<b>Total.....</b>	<b>38,284,494</b>	<b>36,766,574</b>

Table 315.—Employees, Salaries and Wages in the Cement Industry in Canada, 1923 and 1924

Class	1923		1924	
	Number of employees	Salaries and wages	Number of employees	Salaries and wages
		\$		\$
Salaried employees.....Total	112	195,748	97	205,994
Wage-earners.....Total	1,730	2,356,036	1,740	2,325,628
<b>Grand total.....</b>	<b>1,842</b>	<b>2,551,784</b>	<b>1,837</b>	<b>2,531,622</b>

**Table 316.—Number of Wage-Earners in the Cement Industry in Canada, by Months, 1923 and 1924**

Month	1923.	1924	Month	1923	1924
January.....	1,455	1,264	July.....	2,004	1,833
February.....	1,471	1,585	August.....	2,059	1,974
March.....	1,488	1,460	September.....	2,072	2,020
April.....	1,528	1,647	October.....	1,871	1,955
May.....	1,779	1,770	November.....	1,703	1,799
June.....	1,880	1,851	December.....	1,542	1,638
Average for 1923.....					1,730
Average for 1924.....					1,740

**CLAY PRODUCTS**

The production of clay products in Canada for the past three years has been tabulated in considerable detail in another section of this report, and the object of this description is a consideration of the statistics regarding the more important financial aspects and the general conditions of the industry.

The clay products industry was divided into five main groups as follows: brick and tile, clay sewer-pipe, fire brick and fire clay, stoneware and pottery, and kaolin and other clays. The number and location by provinces of the plants operating in 1924 are shown in the subjoined tables.

Capital employed, as represented by the value of lands, buildings, fixtures, machinery and tools, finished stocks on hand and available cash, for the whole clay products industry was less by \$2,483,377 in 1924 than in the preceding year.

The principal fuel employed was bituminous coal, and as most of the important brick plants are located in the neighbourhood of the large industrial centres of Ontario and Quebec, the industry is largely dependent on imported coal. Wood is used by many of the smaller plants in outlying parts.

Natural gas is of material assistance to the clay industries at Medicine Hat and Redcliff, Alberta. The Medalta Potteries at Medicine Hat bring their clays in from Saskatchewan and, owing to their low costs, are able to ship stoneware into Ontario and Quebec markets in competition with the potteries of those provinces. The clays near Redcliff are obtained by mining and are consequently very difficult to dry and burn; the advantage of having cheap fuel at hand enables the operators to produce pressed brick at reasonable costs.

In the tables on the primary mineral production of Canada, statistics relating to the clay products industry include only data supplied by companies using Canadian clays either alone or with imported clays. But there are a few other companies in Canada producing clay products from imported clays exclusively. For this reason, and to complete the survey of the industry as a whole, additional tables have been prepared which contain information regarding the operations of these companies in 1924.

Tables 317 to 321 relate to data included in mineral production tables; tables 322 to 325 show corresponding information concerning companies using imported clays only.

**Table 317.—Principal Statistics of the Clay Products\* Industry in Canada, 1923 and 1924**

	1923				1924			
	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery
Number of active plants.....	204	5	6	4	192	5	7	6
Capital employed.....\$	24,866,834	3,022,522	1,786,353	314,862	24,423,104	3,149,838	1,850,385	387,667
Salaries employees.....	320	28	19	12	268	28	27	8
Salaries paid.....\$	574,189	89,860	57,656	16,439	480,139	96,385	71,100	10,984
Average number of wage-earners.....	3,634	431	173	107	3,064	439	181	105
Wages paid.....\$	3,471,298	471,655	228,721	100,782	2,591,240	500,213	187,316	103,941
Fuel cost.....\$	2,254,445	307,681	90,286	14,607	1,508,573	28,148	74,431	14,642
Miscellaneous expenses.....\$	1,410,051	307,870	61,277	88,233				
Value of products sold or used...\$	8,220,269	1,421,002	605,968	230,924	7,046,355	1,343,197	581,838	240,687

\*Not including Kaolin and Other Clays.

**Table 318.—Establishments Reporting Shipments in the Clay Products Industry in Canada, by Provinces, 1924**

Province	Number of establishments in groups indicated					
	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Kaolin and other clays	Total
Prince Edward Island.....	1					1
Nova Scotia.....	6	1	3			10
New Brunswick.....	3			2		5
Quebec.....	16	1	1			18
Ontario.....	136	3	2	2		143
Manitoba.....	5					5
Saskatchewan.....	7					7
Alberta.....	9		1	2		12
British Columbia.....	9					9
<b>Canada.....</b>	<b>192</b>	<b>5</b>	<b>7</b>	<b>6</b>		<b>210</b>

**Table 319.—Capital Employed in the Clay Products Industry in Canada, by Provinces, 1923 and 1924**

	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
<b>By Industries—</b>								
<i>Brick and tile—</i>								
Nova Scotia.....	791,339	54,268	24,143	<b>869,750</b>	546,313	19,121	7,945	<b>573,379</b>
New Brunswick.....	71,746	5,785	21,468	<b>98,999</b>	94,699	2,500		<b>97,199</b>
Quebec.....	6,547,919	592,302	154,466	<b>7,294,687</b>	7,827,840	562,906	347,737	<b>8,738,483</b>
Ontario.....	9,774,918	1,427,725	1,961,391	<b>13,164,034</b>	9,468,472	1,235,732	1,553,463	<b>12,257,667</b>
Manitoba.....	242,199	61,700	63,901	<b>367,800</b>	123,344	89,704	39,454	<b>252,502</b>
Saskatchewan.....	647,559	76,060	11,836	<b>735,455</b>	644,582	73,535	3,345	<b>721,462</b>
Alberta.....	1,189,673	143,950	44,912	<b>1,378,535</b>	654,141	114,787	29,847	<b>798,775</b>
British Columbia.....	707,582	189,187	60,805	<b>957,574</b>	769,123	140,623	73,891	<b>983,637</b>
Total for Canada.....	19,972,935	2,550,977	2,342,922	<b>24,866,834</b>	20,128,514	2,238,908	2,055,682	<b>24,423,104</b>
<i>Clay sewer pipe—</i>								
Total for Canada.....	2,376,618	459,259	186,645	<b>3,022,522</b>	2,223,563	568,921	357,354	<b>3,149,838</b>
<i>Firebrick and fireclay products—</i>								
Total for Canada.....	1,098,003	236,506	451,844	<b>1,786,353</b>	1,155,833	321,088	373,464	<b>1,850,385</b>
<i>Stoneware and pottery—</i>								
Total for Canada.....	162,130	78,212	74,520	<b>314,862</b>	185,759	82,340	119,568	<b>387,667</b>
<i>Kaolin and other clays—</i>								
Total for Canada.....	2,303,800			<b>2,303,800</b>				
<b>By Provinces—</b>								
<i>Total for clay and clay products—</i>								
Nova Scotia.....	1,254,660	157,802	27,433	<b>1,439,895</b>	1,055,085	142,677	10,514	<b>1,208,276</b>
New Brunswick.....	85,181	22,706	26,988	<b>134,875</b>	110,077	25,637	9,635	<b>145,349</b>
Quebec.....	9,558,829	716,065	417,247	<b>10,692,141</b>	8,545,161	733,378	586,825	<b>9,865,364</b>
Ontario.....	11,865,372	1,742,251	2,168,123	<b>15,775,746</b>	11,407,739	1,653,952	1,890,482	<b>14,952,173</b>
Manitoba.....	242,199	61,700	63,901	<b>367,800</b>	123,344	89,704	39,454	<b>252,502</b>
Saskatchewan.....	647,559	76,060	11,836	<b>735,455</b>	644,582	73,535	3,345	<b>721,462</b>
Alberta.....	1,552,104	359,183	279,598	<b>2,190,885</b>	1,038,558	351,751	291,922	<b>1,682,231</b>
British Columbia.....	707,582	189,187	60,805	<b>957,574</b>	769,123	140,623	73,891	<b>983,637</b>
<b>Canada.....</b>	<b>25,913,486</b>	<b>3,324,954</b>	<b>3,055,931</b>	<b>32,294,371</b>	<b>23,693,669</b>	<b>3,211,257</b>	<b>2,906,068</b>	<b>29,810,994</b>

**Table 320.—Employees, Salaries and Wages in the Clay Products Industry in Canada 1923 and 1924**

	1923				1924			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES—Total.....	342	37	379	738,144	297	34	331	658,608
WAGE-EARNERS—Total.....	4,313	38	4,351	4,273,556	3,778	11	3,789	3,382,710
Grand total.....	4,655	75	4,730	5,011,700	4,075	45	4,120	4,041,318

**Table 321.—Number of Wage-Earners in the Clay Products Industry in Canada, by Months and by Industries, 1924**

Month	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Kaolin and other clays	Total for clay and clay products
January.....	1,448	420	143	101		2,912
February.....	1,357	401	141	111		2,010
March.....	1,755	349	147	112		2,363
April.....	2,304	411	159	122		2,996
May.....	3,198	443	185	122		3,948
June.....	3,605	467	185	114		4,371
July.....	3,731	471	176	115		4,493
August.....	3,351	474	153	111		4,089
September.....	2,990	471	149	83		3,693
October.....	2,551	470	147	83		3,251
November.....	2,160	460	146	87		2,853
December.....	1,870	434	151	89		2,544
*Average for 1924.....	3,064	439	181	105		3,789
*Average for 1923.....	3,634	431	173	107	6	4,351

\* Average computed by totalling the average number of wage-earners employed by each reporting company.

**Table 322.—Capital Employed by Companies in Canada Using Only Imported Clays, 1923 and 1924**

	1923	1924
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, plant machinery and tools.....	1,073,038	961,927
Cost of supplies and stock on hand.....	514,499	415,535
Cash, trading and operating accounts.....	501,975	300,071
Total.....	2,089,512	1,677,533

**Table 323.—Employees, Salaries and Wages Paid by Companies in Canada Using Only Imported Clays, 1923 and 1924**

	1923				1924			
	Number employed			Salaries and wages	Number employed			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES—Total...	43	11	54	116,871	36	9	45	104,277
WAGE-EARNERS—Total.....	600		600	659,588	424	20	444	462,866
Grand Total.....	643	11	654	776,459	460	29	489	567,143

**Table 324.—Number of Wage-Earners Employed by Companies in Canada Using Only Imported Clays, by Months, 1923 and 1924**

Month	Number		Month	Number	
	1923	1924		1923	1924
January.....	565	520	July.....	647	410
February.....	541	513	August.....	613	415
March.....	553	479	September.....	585	422
April.....	566	471	October.....	572	420
May.....	592	444	November.....	574	440
June.....	619	411	December.....	597	364
Average 1923.....				600	
Average 1924.....				444	

**Table 325.—Fuel and Electricity Used by Companies in Canada Using Only Imported Clays, 1923 and 1924**

	1923		1924	
	Quantity	Value	Quantity	Value
Bituminous coal.....short tons	13,356	\$ 104,813	11,294	\$ 84,552
Anthracite coal....."	4,298	56,067	3,167	40,296
Coke....."	25	328	201	2,156
Oil (fuel).....imp. gal.	120,199	14,258	48,191	3,353
Wood.....cord	339	1,552	262	1,499
Gas.....M cu.ft.	448	314	699	489
Electricity.....k.w.h.		10,342	847,732	9,016
Other fuel.....		216		130
<b>Total.....</b>		<b>187,890</b>		<b>141,491</b>

### LIME BURNING

The greatest development in Canada in the business of lime burning has been in Ontario and to a less extent in Quebec. Apart from the fact that the chemical and physical properties of the limestone in these provinces, make it suitable for burning in kilns, the more extensive building and construction operations carried on, provide a ready market for the burned lime.

In the whole of Canada during 1924 there were 49 producing plants, 25 plants being located in Ontario, 11 in Quebec, 1 in Nova Scotia, 5 in New Brunswick, 2 in Manitoba, 2 in Alberta and 3 in British Columbia. The total capital employed in the lime industry amounted to approximately 5 million dollars. The 36 plants in Ontario and Quebec reported \$3,039,125, capital employed, while the 3 plants in British Columbia showed \$1,252,610 under this item.

Returns received from operators in 1923 showed 197 active kilns, the daily capacity of which was 2,456 tons. Eight hydrators were in operation during that year, comprising four Clyde, one Shaffer, one Kritzer and one special type. High calcium limestone was used by 45 firms, dolomite by 10 firms and both high calcium and dolomite by 1 operator.

In the manufacture of lime, fuel is one of the principal items of cost. Wood was widely used throughout Ontario and Quebec where the supply is plentiful and where many of the kilns are small, but considerable quantities of coal were also used. In the British Columbia plants, wood only was used.

**Table 326.—Principal Statistics of the Lime Industry in Canada, 1920-1924**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	58	(a)	1,069	1,314,186	(a)	(a)	3,818,553
1921.....	66	4,990,969	931	949,966	698,992	407,620	2,781,197
1922.....	63	4,984,910	1,110	1,013,486	725,165	522,222	3,165,005
1923.....	50	6,050,954	1,197	1,191,416	953,709	806,916	3,266,608
1924.....	49	5,165,964	927	970,672	740,878	757,898	3,178,541

(a) Data not available.

Table 327.—Capital Employed in the Lime Industry in Canada, by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
New Brunswick.....	210,539	36,208	55,302	302,049	210,483	36,939	29,725	277,147
Quebec.....	1,664,892	191,324	177,401	2,033,617	916,965	112,848	138,928	1,168,741
Ontario.....	1,438,929	225,016	234,903	1,899,748	1,565,850	159,893	144,641	1,870,384
Manitoba.....	448,223	36,443	6,193	490,859	405,884	26,916	4,500	437,300
Alberta.....	134,564	8,325	18,048	160,937	134,563	8,617	16,602	159,782
British Columbia.....	1,017,905	61,308	84,531	1,163,744	1,108,148	66,754	77,708	1,252,610
<b>Canada.....</b>	<b>4,915,052</b>	<b>559,524</b>	<b>576,378</b>	<b>6,050,954</b>	<b>4,341,893</b>	<b>411,967</b>	<b>412,104</b>	<b>5,165,964</b>

Table 328.—Employees, Salaries and Wages in the Lime Industry in Canada, by Provinces, 1923 and 1924

	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
<b>1923</b>							
<b>SALARIED EMPLOYEES:—</b>							
Total..... No.	19	23	37	6	2	14	94
..... \$	15,148	49,130	57,007	9,877	5,000	34,166	170,328
<b>WAGE-EARNERS—</b>							
Total—							
Male..... No.	97	255	542	79	14	116	1,103
Wages..... \$	*72,470	212,297	549,613	58,229	13,862	114,617	1,021,988
<b>Total Employees..... No.</b>	<b>109</b>	<b>278</b>	<b>579</b>	<b>85</b>	<b>16</b>	<b>130</b>	<b>1,197</b>
<b>Total Salaries and Wages..... \$</b>	<b>87,618</b>	<b>261,427</b>	<b>606,620</b>	<b>68,106</b>	<b>18,862</b>	<b>148,783</b>	<b>1,191,416</b>
<b>1924</b>							
<b>SALARIED EMPLOYEES:—</b>							
Total..... No.	15	19	39	6	2	10	91
..... \$	21,735	37,575	74,320	9,140	4,750	21,357	168,877
<b>WAGE-EARNERS—</b>							
Total—							
Male..... No.	77	180	398	56	12	113	836
Wages..... \$	56,592	158,968	402,292	38,232	13,370	132,341	801,795
<b>Total Employees..... No.</b>	<b>92</b>	<b>199</b>	<b>437</b>	<b>62</b>	<b>14</b>	<b>123</b>	<b>927</b>
<b>Total Salaries and Wages..... \$</b>	<b>78,327</b>	<b>196,543</b>	<b>476,612</b>	<b>47,372</b>	<b>18,120</b>	<b>153,698</b>	<b>970,672</b>

\*Includes Nova Scotia.

Table 329.—Number of Wage-Earners in the Lime Industry in Canada, by Provinces and by Months, 1924

Month	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
January.....	79	144	429	53	3	96	804
February.....	70	176	435	54	9	99	843
March.....	77	163	421	52	13	114	840
April.....	77	188	401	49	11	120	846
May.....	93	186	408	63	18	120	888
June.....	93	198	375	61	17	114	858
July.....	79	183	373	64	13	105	817
August.....	73	181	351	57	12	90	764
September.....	74	169	353	55	12	118	781
October.....	84	192	389	55	10	119	849
November.....	76	153	397	53	10	107	796
December.....	47	156	381	55	9	102	750
<b>Average for 1924.....</b>	<b>77</b>	<b>180</b>	<b>398</b>	<b>56</b>	<b>12</b>	<b>113</b>	<b>836</b>
<b>Average for 1923.....</b>	<b>97</b>	<b>255</b>	<b>542</b>	<b>79</b>	<b>14</b>	<b>116</b>	<b>1,103</b>

## SAND AND GRAVEL

For statistical purposes, the sand and gravel industry has been divided into two parts comprising the operations of (1) railway companies producing sand and gravel for ballast and other purposes; (2) all other producers.

The figures given in the following tables do not include the operations of railway companies except where specifically mentioned. The railway companies were not asked to furnish any statistics for this industry other than the figures for production, as, owing to the varied nature of their operations, it would have been impossible for them to give the detailed data generally required. Among the other operating plants in this industry, of which there were 558, in Canada in 1924, it was found that the production of sand and gravel was often a subsidiary part of the business transacted. On this account the figures shown for capital employed in 1924 refer in small part to other industries, but on the whole, relate as closely as possible to the industry under review.

It will be readily apparent from an inspection of the tables on employees that totals do not represent the actual number of persons engaged in the industry as a great many of the smaller operators had no paid help. Also, in some instances the labour was provided by those requiring sand and gravel. The following tables which show comparative figures for salaried officials, wage-earners, and fuel costs are self-explanatory.

Table 330.—Principal Statistics of the Sand and Gravel Industry in Canada, 1920-1924

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1920.....	186	(a)	1,546	1,343,212	(a)	(a)	4,291,067
1921.....	218	(a)	590	454,910	47,641	265,403	2,537,249
1922.....	342	4,098,928	750	684,626	99,069	445,222	3,502,935
1923.....	598	4,487,005	801	692,161	99,409	270,554	3,016,518
1924.....	558	5,194,037	927	848,741	134,378	.....	3,181,083

(a) Data not available.

Table 331.—Capital Employed in the Sand and Gravel Industry in Canada, by Provinces, 1923 and 1924

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	16,500	2,500	7,425	26,425	16,500	2,500	3,000	22,000
New Brunswick.....	5,500	56	.....	5,556	5,500	51	.....	5,551
Quebec.....	320,252	3,285	20,693	344,230	267,727	2,922	33,890	304,539
Ontario.....	2,249,874	231,109	365,612	2,846,595	3,148,359	56,491	257,178	3,462,028
Manitoba.....	372,914	12,945	34,874	420,733	352,394	9,678	46,795	408,867
Saskatchewan.....	39,750	.....	.....	39,750	40,750	.....	.....	40,750
Alberta.....	201,978	160	212	202,350	278,218	14,744	4,598	297,560
British Columbia.....	578,384	655	22,327	601,366	585,789	654	66,299	652,742
<b>Canada.....</b>	<b>3,785,152</b>	<b>250,710</b>	<b>451,143</b>	<b>4,487,005</b>	<b>4,695,237</b>	<b>87,040</b>	<b>411,760</b>	<b>5,194,037</b>

**Table 332.—Employees, Salaries and Wages in the Sand and Gravel Industry in Canada, by Provinces, 1923 and 1924**

Province	1923				1924			
	Number of employees			Salaries and wages	Number of employees			Salaries and wages
	On salary	On wages	Total		On salary	On wages	Total	
Nova Scotia.....	3	37	40	\$ 14,556	2	16	18	\$ 10,508
New Brunswick.....	1	10	11	1,841	1	13	14	1,717
Quebec.....	9	83	92	51,741	8	177	185	80,922
Ontario.....	67	481	548	512,522	63	486	549	552,370
Manitoba.....	6	19	25	28,340	7	29	36	38,503
Saskatchewan.....	.....	5	5	3,993	.....	3	3	3,043
Alberta.....	2	29	31	18,575	4	54	58	44,958
British Columbia.....	8	41	49	60,593	8	56	64	116,720
<b>Canada.....</b>	<b>96</b>	<b>705</b>	<b>801</b>	<b>692,161</b>	<b>93</b>	<b>834</b>	<b>927</b>	<b>848,741</b>

**Table 333.—Number of Wage-Earners in the Sand and Gravel Industry in Canada, by Months and by Provinces, 1924**

Month	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
January.....	6	13	22	173	3	1	1	45	264
February.....	8	1	29	172	3	1	1	50	265
March.....	9	1	55	196	3	1	1	52	318
April.....	9	1	79	324	16	2	79	53	563
May.....	13	1	165	453	33	3	112	54	834
June.....	18	1	188	507	31	3	75	54	877
July.....	20	1	153	493	35	3	56	63	829
August.....	19	1	175	475	31	3	46	69	819
September.....	19	1	203	456	31	3	12	65	790
October.....	18	1	172	428	25	3	38	58	743
November.....	14	1	150	387	13	1	45	54	665
December.....	3	1	116	264	5	1	25	52	467
<b>*Average.....</b>	<b>16</b>	<b>13</b>	<b>177</b>	<b>486</b>	<b>29</b>	<b>3</b>	<b>54</b>	<b>56</b>	<b>834</b>

\*Average computed by totalling the average number of wage-earners employed by each reporting company.

## STONE

Operations in the stone-quarrying industry in Canada in 1923 were carried on by 170 firms. The number of producers in each province was as follows: Nova Scotia, 10; New Brunswick, 10; Quebec, 68; Ontario, 65; Manitoba, 3; Alberta 3; and British Columbia 11.

The statistics collected under mineral production for the stone industry are confined to quarrying operations and stone-dressing works conducted in conjunction with the quarry. It must be borne in mind when reviewing the tabulated statistics for this industry that there is a considerable quantity of stone quarried by farmers, etc., for local foundation and concrete work, of which no accurate general information can be obtained.

**Table 334.—Principal Statistics Relating to the Stone Quarrying Industry in Canada, 1920-1924**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$ (a)		\$	\$ (a)	\$ (a)	\$
1920.....	168		3,487	3,302,253			7,580,351
1921.....	145	11,138,035	2,067	2,017,272	141,442	2,369,130	6,343,696
1922.....	162	13,004,233	2,859	2,673,241	167,139	1,259,552	5,989,864
1923.....	158	13,725,677	2,850	2,665,520	400,517	1,130,639	5,920,578
1924.....	170	14,317,148	2,877	2,768,256	383,800	1,329,233	6,407,757

(a) Data not available.

**Table 335.—Capital Employed in the Stone Quarrying Industry in Canada,  
by Provinces, 1923 and 1924**

Province	1923				1924			
	Capital employed as represented by				Capital employed as represented by			
	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	1,090,694	36,090	14,166	<b>1,140,950</b>	1,116,723	24,341	11,713	<b>1,152,777</b>
New Brunswick...	116,406	22,084	21,260	<b>159,750</b>	100,386	29,266	27,265	<b>156,917</b>
Quebec.....	3,804,242	246,153	526,406	<b>4,576,801</b>	4,096,958	366,228	535,230	<b>4,998,416</b>
Ontario.....	6,398,215	259,625	427,251	<b>7,085,091</b>	6,139,998	253,106	518,030	<b>6,911,134</b>
Manitoba.....	210,906	6,184	45,435	<b>262,525</b>	205,123	8,885	62,961	<b>276,969</b>
Alberta.....					8,000			<b>8,000</b>
British Columbia..	350,837	29,725	119,998	<b>500,560</b>	454,723	152,193	206,019	<b>812,935</b>
<b>Canada.....</b>	<b>11,971,300</b>	<b>599,861</b>	<b>1,154,516</b>	<b>13,725,677</b>	<b>12,121,911</b>	<b>834,019</b>	<b>1,361,218</b>	<b>14,317,148</b>

**Table 336.—Employees, Salaries and Wages in the Stone Quarrying Industry in  
Canada, by Provinces, 1923 and 1924**

		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	British Columbia	Canada
1923								
SALARIED EMPLOYEES—	No.	8	8	92	76	6	11	201
Total.....	Salaries \$	10,256	8,140	143,819	146,516	11,775	23,935	<b>344,441</b>
	Wages \$	138	107	1,241	963	63	137	<b>2,649</b>
WAGE-EARNERS.....	No.	89,447	70,685	1,102,923	853,173	69,043	135,808	<b>2,321,079</b>
	Wages \$	89,447	70,685	1,102,923	853,173	69,043	135,808	<b>2,321,079</b>
<b>Total—Employees.....</b>	No.	<b>146</b>	<b>115</b>	<b>1,333</b>	<b>1,039</b>	<b>69</b>	<b>148</b>	<b>2,850</b>
<b>Salaries and wages.....</b>	\$	<b>99,703</b>	<b>78,825</b>	<b>1,246,742</b>	<b>999,689</b>	<b>80,818</b>	<b>159,743</b>	<b>2,665,520</b>
1924								
SALARIED EMPLOYEES—	No.	4	8	95	67	5	17	196
Total.....	Salaries \$	6,881	11,200	153,216	131,862	8,694	38,631	<b>352,484</b>
	Wages \$	87	78	1,376	892	52	176	<b>*2,681</b>
WAGE-EARNERS.....	No.	54,254	39,235	1,235,159	813,724	56,241	208,242	<b>*2,415,772</b>
	Wages \$	54,254	39,235	1,235,159	813,724	56,241	208,242	<b>*2,415,772</b>
<b>Total—Employees.....</b>	No.	<b>91</b>	<b>86</b>	<b>1,471</b>	<b>959</b>	<b>57</b>	<b>193</b>	<b>*2,877</b>
<b>Salaries and wages.....</b>	\$	<b>61,135</b>	<b>50,435</b>	<b>1,399,375</b>	<b>945,586</b>	<b>64,935</b>	<b>246,873</b>	<b>*2,768,256</b>

\*Includes 20 wage-earners receiving \$8,917 in Alberta.

## PART THREE

### DIRECTORY

In the following pages the names and addresses of all the principal operators in the Canadian mineral industry are given, and the location of the properties worked in 1924 is also shown.

## METALLIC MINERAL INDUSTRIES

## The Auriferous Quartz Mining Industry

Name of Operator	Address	Name of Mine	Location of Mine
<b>NOVA SCOTIA</b>			
Cons. Mines and Power Co.....	170 Summer St., Boston.....	Sherbrooke.....	Guysboro Co.
Hall and Hickey.....	Cariboo Gold Mines.....	Bessie A. Hall.....	Halifax Co.
*Hiseler and Emmet.....	60 Edward St., Halifax.....	Fisk Block.....	Queens Co.
*Ingles and Ramey.....	Gottingen St., Halifax.....	I.X.L.....	Hants Co.
Joseph Lenihan.....	1749 Hower Av. E. Cleveland, Ohio.....	Malaga.....	Queens Co.
*Malaga Gold Mines.....	Malaga.....	Malaga.....	Queens Co.
Maritime Gold Mines, Ltd.....	Moose River Gold Mines.....	Moose River.....	
Short and Ashley.....	Oldham.....		
<b>ONTARIO</b>			
<b>Kirkland Lake Area—</b>			
*Bidgood Gold Mines, Ltd.....	Haileybury.....	Bidgood.....	Lebel Tp.
*Canadian Kirkland Gold Mining Co.....	Haileybury.....	Canadian Kirkland.....	Teck Tp.
*Harvey Kirkland Mines, Ltd.....	506 C.P.R. Bldg., Toronto.....	Harvey Kirkland.....	Lebel Tp.
*Huntton Kirkland Gold Mines, Ltd.....	Haileybury.....	Huntton.....	Kirkland Lake.
*Kirk Gold Mines Co.....	911 Kent Bldg., Toronto.....		Lebel Tp.
Kirkland Lake Gold Mining Co., Ltd.....	810 Lumsden Bldg., Toronto.....	Kirkland Lake.....	Teck Tp.
*Kirkland Townsite Gold Mines.....	Haileybury.....		Teck Tp.
Lake Shore Mines, Ltd.....	Kirkland Lake.....	Lake Shore.....	Teck Tp.
*Lebel Oro Mines, Ltd.....	Bk. of Toronto Bldg., Toronto.....		Lebel Tp.
Teck Hughes Gold Mines, Ltd.....	Kirkland Lake.....	Teck Hughes.....	Teck Tp.
Tough Oakes Burnside Gold Mines.....	217 Bay St., Toronto.....	Tough Oakes, Burnside.....	Teck and Lebel Tp.
Wright-Hargreaves Mines, Ltd.....	Bridgeburg.....	Wright-Hargreaves.....	"
<b>Boston Creek Area—</b>			
*Barry-Hollinger Gold Mines, Ltd.....	Boston Creek.....	Barry-Hollinger.....	Pacaud Tp.
*Gold Hill Mining Co.....	Haileybury.....	Gold Hill.....	Catherine Tp.
<b>Larder Lake Area—</b>			
Argonaut Gold, Ltd.....	Argonaut.....	Argonaut.....	Gauthier Tp.
*Crown Reserve Mining Co., Ltd.....	Larder Lake.....	Pancake.....	Larder Lake.
Northland Gold Mine, Ltd.....	Box 119, Haileybury.....	Northland.....	Gauthier Tp.
<b>Lightning River Area—</b>			
*Blue Quartz Gold Mines Ltd.....	328 Confed. Life Bldg, Toronto.....	Blue Quartz.....	Painkiller Lake.
<b>Northwestern Ontario Area—</b>			
*British Canadian Mines, Ltd.....	8 Bloor St. E., Toronto.....	Foley.....	Rainy River District.
*Contact Bay Mines, Ltd.....	326 Cutler Bldg., Rochester, N.Y.....	Contact Bay.....	Van Horn Tp.
<b>Painkiller Area—</b>			
Clifford Gold Mines, Ltd.....	328 Confederation Life Bldg., Toronto.....	Clifford.....	Painkiller Lake.
<b>Porcupine Area—</b>			
Barlow and Faulkenham.....	Matheson.....	L. 9266.....	Munro Tp.
*Beaumont Gold Mines, Ltd.....	1601 Royal Bank Bld., Toronto.....	Beaumont.....	Tisdale Tp.
*Canadel Gold, Ltd.....	Box G. Timmins.....	Canadel.....	Tisdale and Whitney Tp.
Clifton Porcupine Mines, Ltd.....	South Porcupine.....	Clifton.....	Deloro Tp.
*Coniarum Mines Ltd.....	50 Ontario St., St. Catharines.....	Coniarum.....	Tisdale Tp.
Consolidated West Dome Mines, Ltd.....	Bk of Hamilton Bldg., Toronto.....	Dome Lake.....	Tisdale Tp.
		West Dome.....	
Dome Mines Company, Ltd.....	South Porcupine.....	Dome.....	Tisdale Tp.
Hayden Gold Mines Co., Ltd.....	Buffalo.....	Hayden.....	Deloro Tp.
Hollinger Consolidated Gold Mines, Ltd.....	Timmins.....	Hollinger.....	Tisdale Tp.
*Kerr Lake Mining Co., Ltd.....	Cobalt.....	Goldale.....	Tisdale Tp.
*Lake Matachewan Gold Mg. Co.....	156 Yonge St., Toronto.....		Powell Tp.
*London Gull Lake Mines.....	293 Bay St., Toronto.....		
*March Gold, Ltd.....	South Porcupine.....	March Gold.....	Deloro Tp.
McIntyre Porcupine Mines, Ltd.....	602 Standard Bank Bldg., Toronto.....	McIntyre.....	Tisdale Tp.
*Night Hawk Peninsula Mines, Ltd.....	Toronto.....	Night Hawk.....	Cody Tp.
*Ore Chimney Mining Co.....	Northbrook.....		Barrie Tp.
Porcupine Paymaster Mines, Ltd.....	South Porcupine.....	Paymaster.....	Deloro Tp.
*South Keora Mines, Ltd.....	C.P.R. Bldg., Toronto.....	South Keora.....	
*Thomas Gold Mining Co.....	c/o Excelsior Bldg., Toronto.....	Thomas.....	Thomas Tp.
Vipond Consolidated Mines, Ltd.....	302 Bay St., Toronto.....	Vipond.....	Tisdale Tp.
<b>Sudbury Area—</b>			
*Buckingham Mines, Ltd.....	West Shining Tree.....	Buckingham.....	Asquith Tp.
*Kingston Mines.....	Temple Bldg., Toronto.....	Kingston.....	McMurphy Tp.
*Wm. Mundell.....	Metagama.....	Ina.....	
*Thesaurus Gold Mines, Ltd.....	Elk Lake.....	Thesaurus.....	Baden Tp.
<b>MANITOBA</b>			
*Bingo Gold Mines Ltd.....	Winnipeg.....	Bingo.....	Pas Dist.
Lake Superior Metals Co.....	c/o J. W. Harris, Masonic Temple, Winnipeg.....	Gold Pan.....	Rice Lake.
Manitoba Metals Mining Co.....	Bk. of Ham. Bldg., Toronto.....	Rex.....	Herb Lake.

\*Operating but not producing.

**The Auriferous Quartz Mining Industry—Concluded**

Name of Operator	Address	Name of Mine	Location of Mine
<b>BRITISH COLUMBIA</b>			
*Fairview Mining Co.....	Fairview.....	Susie.....	Yale.
Fraser, N.....	Anyox.....	Esperanza.....	Nass River
Hedley Gold Mining Co., Ltd.....	Hedley.....	Nickel Plate.....	Similkameen.
I.X.L. Mining and Milling Co.....	Kimberley.....	I.X.L.....	Rossland.
*Kalum Lake Mines, Ltd.....	Terrace.....	Portland.....	Skeena
Norcross, D. H.....	P.O. Box 296, Nelson.....	Granite.....	Nelson.
Pioneer Gold Mines.....	Lorne Mine.....	Pioneer.....	Lillooet
Premier Gold Mining Co., Ltd.....	Premier.....	Premier.....	Skeena.
M. E. Purcell.....	Spokane, Wash.....	Golden Drip.....	Kootenay
Windpass Gold Mining Co.....	Box 1024, Fernie.....	Windpass.....	Yale.

**The Copper-Gold-Silver Mining Industry**

<b>QUEBEC</b>			
Arntfield Syndicate.....	13 King St. W., Toronto.....		Boischatel Tp.
Crown Reserve Mg. Co.....	Montreal.....		Dessera, Que.
Eustis Mining Company.....	Eustis.....	Eustis.....	Ascot.
Huronian Belt Co.....	302 Bay St., Toronto.....		Rouyn Tp.
McIntyre Porcupine Mine.....	Standard Bk. Bldg., Toronto.....		Rouyn Tp.
Nipissing Mg. Co., Ltd.....	Cobalt.....		Rouyn Tp.
Noranda Mines Ltd.....	Royal Bk. Bldg., Toronto.....		Rouyn Tp.
Rouyn Gold Mines, Ltd.....	St. James St., Montreal.....		Rouyn Tp.
Stabell Gold Mines, Ltd.....	King St. E., Toronto.....	Stabell.....	Dubuisson Tp.
The Chance Syndicate.....	800 University St., Montreal.....		Boischatel Tp.
Union Mining Corp.....	Box 222 Amos, Que.....		Dubuisson Tp.
<b>BRITISH COLUMBIA</b>			
Belmont Surf Inlet Mines, Ltd.....	Surf Inlet.....	Surf Inlet.....	Skeena District.
Britannia Mining and Smelting Co.....	Britannia Beach.....	Britannia.....	Vancouver Is.
*Coast Copper Co., Ltd.....	703 Birkas Bldg., Vancouver.....	Old Sport Merry Widow.....	Vancouver Is.
Consolidated Mining & Smelting Co. of Canada, Ltd.....	Rossland.....	Rossland Group.....	West Kootenay, Nelson Division.
*Dome Mountain Gold Mining Co., Ltd.....	Telkwa.....	Dome Mt.....	
Wm. Dumont.....	Blewett.....	Central.....	Eagle Creek.
*Federal Mg. & S. Co.....	Telkwa.....	(Diamond Bell.....)	Owen Lake.
		(Silver Queen.....)	
*Gabbro Copper Mines, Ltd.....	415 Sayward Bldg., Victoria.....	Gabbro.....	Jordan River District, Victoria Division.
Granby Consolidated Mining, Smelting and Power Co., Ltd.....	Anyox.....	(Hidden Creek Group.....)	Observatory Inlet, Nass Division.
Kamloops Copper Co.....	Duluth, Minn.....	Iron Mask.....	Kamloops Division.
*Kickbush, F. C.....	Chilliwack.....	Empire.....	Lillooet District.
F. T. Patterson.....	Refuge Bay.....	Patterson.....	Coast Dist.
*Princeton Mining and Development Co.....	Princeton.....		Similkameen Dist.
Rossland Velvet Mines, Ltd.....	Rossland.....	Velvet.....	Near Rossland.
W. S. Santo.....	Cranbrook.....	Santo.....	Bull River.

**Iron Mining Industry**

<b>QUEBEC</b>			
Baie St. Paul Titanic Iron Ore Co.....	Baie St. Paul.....	Glen.....	St. Urbain.
<b>ONTARIO</b>			
Moose Mountain, Ltd.....	Sellwood.....		Sellwood.
<b>BRITISH COLUMBIA</b>			
Pacific Coast Steel Co.....	Van Anda.....	Good Hope.....	Van Anda.

\*Operating but not shipping.

## Manganese Industry

Name of Operator	Address	Name of Mine	Location of Mine
NEW BRUNSWICK			
Thompson, F. M.....	Hillsborough.....	Dawson.....	Albert Co.

## Molybdenum Industry

QUEBEC			
Canadian Wood Molybdenite Co.....	Quyon.....	Moss.....	Onslow Tp.

## Nickel-Copper Mining Industry

ONTARIO			
British America Nickel Corp., Ltd....	Ottawa.....	Murray.....	Nickelton.
International Nickel Co. of Canada, Ltd.	87 Wall St., New York.....	Creighton.....	Sudbury.
Mond Nickel Co., Ltd.....	Coniston.....	Worthington Levaek.....	Drury and Levaek Tp.
		Garson, Victoria No. 1 and Frood Extension.	

## The Silver-Cobalt Mining Industry

ONTARIO			
*Canadian Lorrain Silver Mines, Ltd....	Haileybury.....	Canadian Lorrain.....	South Lorrain.
*Capital Silver Mines.....	Standard Bk. Bldg., Toronto.	Capital.....	Haultain.
Castle-Tretheway Mines.....	Standard Bk. Bldg., Toronto.	Castle Tretheway.....	Haultain Tp.
Cobalt Contact Mines.....	North Cobalt.....	Cobalt Contact.....	Bucke Tp.
*Coleroy Gowganda Mines, Ltd.....	15 Toronto St., Toronto.....	Coleroy.....	Gowganda.
Coniagas Mines, Ltd.....	50 Ontario St., St. Catharines.	(Coniagas Ruby.....	Coleman Tp.
		(Beaver.....	"
Crown Reserve Mining Co., Ltd.....	Larder Lake.....	Crown Reserve.....	"
*Doherty Easson Mg. Syndicate.....	King St. E., Toronto.....	Penn. Canadian.....	Cobalt.
Everett Mines, Ltd.....	Bank of Hamilton Building, Toronto.....	Everett.....	Gowganda.
Galvin, M. J.....	Sandwich.....	Mother Lode.....	James Tp.
Genesee Mining Co., Ltd.....	Cobalt.....	Genesee.....	Coleman Tp.
Keeley Silver Mines, Ltd.....	302 Bay St., Toronto.....	Keeley.....	South Lorrain.
Kerr Lake Mining Co., Ltd.....	61 Broadway, New York.....	Kerr Lake.....	Coleman Tp.
La Rose Mines, Ltd.....	Cobalt.....	La Rose.....	"
*Lorrain Cons. Mines, Ltd.....	Bank of Hamilton Building, Toronto.....	Lorrain.....	Silver Centre.
McKinley-Darragh-Savage Mines of Co- balt, Ltd.....	Cobalt.....	McKinley-Darragh-Sav- age.....	"
McLeod, J. H.....	Box 156, Cobalt.....	Foster.....	Coleman Tp.
Menago Mining Co., Ltd.....	Sudbury.....	Colonial.....	"
		(Buffalo.....	"
		Lorrain Trout Lake.....	"
		Lorrain Operating Co.....	"
Mining Corporation of Canada, Ltd.....	1512 Bank of Hamilton Bldg., Toronto.....	Townsite.....	"
		City of Cobalt.....	"
		Peterson Lake.....	"
Nipissing Mining Co., Ltd.....	Cobalt.....	Nipissing.....	"
		Alladdin.....	"

\*Operating but not shipping.

## The Silver-Cobalt Industry—Continued.

Name of Operator	Address	Name of Mine	Location
<b>ONTARIO—Concluded</b>			
O'Brien, M. J., Ltd.	Cobalt	O'Brien	Coleman Tp.
*Oxford Cobalt Silver Mines, Ltd.	Woodstock	Miller-Lake-O'Brien	Gowganda.
Penn Canadian Mines, Ltd.	1011 Chestnut St., Philadelphia	Oxford Cobalt	Gillies.
J. H. Ratray	Box 921, Cobalt	Penn Canadian	Cobalt.
Sweet, Joe	Cobalt	(Provincial)	Cobalt.
*Tonopah Canadian Mines	Bullitt Bldg., Philadelphia	Silver Bar	Coleman Tp.
Tretheway Silver-Cobalt Mines, Ltd.	Standard Bank Bldg., Toronto	Silver Queen	Gowganda.
		Walsh	Gowganda.
		Castle	Gowganda.

## The Silver-Lead-Zinc Industry

<b>QUEBEC</b>			
British Metal Corp.	263 St. James St., Montreal	Concentrating plant	Notre Dame.
Tétreault Mines	730 Delorimier Ave., Montreal	Tétreault	Notre-Dame des Anges.
<b>ONTARIO</b>			
Kingdon Mining, Smelting and Manufacturing Co., Ltd.	Galetta	Kingdon	Galetta.
<b>BRITISH COLUMBIA</b>			
<b>Ainsworth Mining Division—</b>			
Bridge & Forsyth	Ainsworth	Firebrand Fraction	Ainsworth.
Bridge and Kennedy (H. Giagerich)	Kaslo	Silver Hoard	Ainsworth.
Burgess, W. H.	Kaslo	Whitewater	Retallack.
Carter, J. A.	Kaslo	Martin	Kaslo Ck.
Cons. Mg. & S. Co. of Can., Ltd.	Tadanac	Highland, No. 1	Ainsworth.
Florence Province Mines, Ltd.	Kaslo	Cork-Province	Zwicky.
Florence Silver Mining Co., Ltd. (D. E. Sanders)	518 Sutton Blk., Spokane, Wash.	Florence	Ainsworth.
*Green and Green	Kaslo	Silver Bell	Kaslo Creek.
Harris, A. J.	Zincton	Charleston	Retallack.
McCready, G. E.	Zincton	Caledonia	Blaylock.
McPherson and Sherman	Ainsworth	Spokane-Trinket	Ainsworth.
United Mines Ltd.	Realty Bldg., Spokane	United	Ainsworth
<b>Atlin Mining Division—</b>			
Atlin Silver-Lead Mines (J. M. Ruffner)	Atlin	Ruffner Gp.	Atlin.
<b>Fort Steele Mining Division—</b>			
Consolidated Mining and Smelting Co. of Canada, Ltd.	Kimberley	Sullivan, St. Eugene	Kimberley.
<b>Golden and Windermere Division—</b>			
Bruce, R. Randolph	Invermere	Paradise	Toby Creek.
Galena Ghat Mines, Ltd.	Invermere	White Cat	Slade Ck.
New Monarch Mines Co., Ltd.	701 Dom. Bldg., Vancouver	Monarch	Field.
<b>Grand Forks Mining Division—</b>			
Williams, A. L.	Edgewood	Lightning Peak	Grand Forks.
<b>Greenwood Mining Division—</b>			
Eholt Mining Co., Ltd.	505 Eagle Bldg., Spokane	Combination	Greenwood.
*Jack Paul Mining Co.	610 Hutton Blk., Spokane, Wash.	Riverside	Greenwood.
McIntosh & Crane	Beaverdell	Bell	Wallace Mountain.
Rambo, W. H.	Beaverdell	Standard Fraction	Wallace Mountain.
Wallace Mountain Mines, Ltd.	Box 176, Penticton	Sally Group	Beaverdell.
Strathmore Syndicate	Greenwood	Strathmore	Greenwood.
<b>Nelson and Arrow Lake Mining Divisions—</b>			
Consolidated Mining and Smelting Co. of Canada, Ltd. (to lessee)	Trail	Molly Gibson	Kokanee Creek.
Forster, H. E.	Wilmer	Millie Mack	Cariboo Creek.
Iron Mountain, Ltd.	Nelson	Emerald	Salmo.
Johnson, J. M.	Lytton	Independent	Cariboo.
*Shepherd Mining Co.	Riondel	Kirby	Riondel.
<b>Omineca Mining Division—</b>			
Duthie, J. F. (John R. Turner)	Smithers	Henderson & Mamie	Hudson Bay Mtn.
<b>Osoyoos Mining Division—</b>			
British America Mg. Corp.	Similkameen	Horn Silver	Similkameen.
<b>Portland Canal Mining Division—</b>			
*Glacier Creek Mining Co., Ltd.	Victoria	Glacier Creek	Portland Canal.
L. and L. Glacier Ck. Mines, Ltd.	Victoria	L. and L.	Portland Canal.
Porter-Idaho Syndicate	Stewart	Porter-Idaho	Stewart.
*Silverado Mines, Ltd.	Victoria	Silverado	Portland Canal.
<b>Slocan and Slocan City Mining Divisions—</b>			
*American Boy Mining Co.	Sandon	American Boy	Sandon.
Bottalla, Emil	New Denver	Apex	Slocan.
Sandon	Sandon	Gem	Carpenter Creek.
Byrne, M. J.	502 North West Bldg., Vancouver	Black Prince & Two	
*Cartwright, C. E.	Sandon	Friends	Lemon.
Clark & Mann	New Denver	Carnation	Sandon.
Clever, H.	Alamo	Mollie Hughes	New Denver.
Cunningham, C.		Alamo, Queen Bess, Sovereign, Wonderful, Van Roi	Alamo.

\*Operating but not shipping.

## The Silver-Lead-Zinc Industry—Concluded

Name of Operator	Address	Name of Mine	Location
<b>BRITISH COLUMBIA—Concluded</b>			
Mountain Chief Mines.....	New Denver.....	Mountain Chief, Mammoth.....	New Denver.
Galena Mining and M. Co.....	Silverton.....	Galena Farm.....	Silverton.
Lucky Jim Lead & Zinc Co., Ltd....	Spokane, Wash.....	Lucky Jim.....	Zincton.
O'Neil, D. B.....	Slocan.....	L. T. Group.....	Slocan.
Ottawa Mining & Milling Co.....	Slocan.....	Ottawa.....	"
Petty, Geo.....	Sandon.....	Lone Bachelor Victor...	Sandon.
Rambler-Cariboo Mines, Ltd. (W. A. Cameron).....	New Denver.....	Rambler-Cariboo.....	Three Forks.
Rosbery-Surprise Mining Co., Ltd....	New Denver.....	Bosun.....	New Denver.
Ruth Hope Mining Co., Ltd.....	Vancouver.....	Ruth.....	Sandon.
Silversmith Mines, Ltd.....	Box 1772, Spokane, Wash.....	Silversmith.....	Sandon.
*Slocan Silver Mines, Ltd.....	Alamo.....	McAllister.....	Three Forks.
Standard Silver-Lead Mining Co.....	Silverton.....	Standard.....	Silverton.
Shannon, E.....	New Denver.....	Peg Leg.....	Slocan.
Trenery, Thos.....	Rosebery.....	Jo Jo.....	Carpenter Ck.
Zimmerman, Kurt.....	Slocan City.....	Anna.....	Springer Creek.
<i>Trail Creek, Trout Lake, Revelstoke &amp; Lardeau Mining Divisions—</i>			
*Waverley Mines Co.....	Albert Canyon.....	Waverley.....	Revelstoke.
Wilson, J. H.....	Poplar Creek.....	Mother Lode.....	Trout Lake.
<b>YUKON</b>			
Keno Hill, Ltd.....	120 Broadway, New York....	Keno Hill, Friendship Sadie.....	Keno Hill, Mayo Division.
Treadwell Yukon Co., Ltd.....	Crocker Bldg., San Francisco, Cal.....	Ladue.....	" "

## Canadian Smelters and Refineries

<b>ONTARIO</b>		
British America Nickel Corp.....	Jackson Bldg., Ottawa.....	Nickelton, Ont., and Deschênes, Que.
Cobalt Reduction Co. (Mining Corp. of Canada.).....	Cobalt.....	Cobalt.
Coniagas Reduction Co.....	St. Catharines.....	Thorold.
Deloro Smelting & Refining Co.....	Deloro.....	Deloro.
International Nickel Co. of Can.....	67 Wall St., New York.....	Copper Cliff.
Kingdon Mining, Smelting and Power Co.....	Galetta.....	Galetta.
Mond Nickel Co.....	Coniston.....	Coniston.
Nipissing Mining Co.....	Cobalt.....	Cobalt.
<b>BRITISH COLUMBIA</b>		
Consolidated Mining and Smelting Co..	Trail.....	Trail, Rossland, Kimberley.
Granby Consolidated Mining, Smelting and Power Co.....	Anyox.....	Anyox.

\*Operating but not shipping.

In the Yukon Territory, development operations were carried on by many individual operators and by a few incorporated companies in the Keno Hill area.

## NON-METALLIC MINERAL INDUSTRIES

## Actinolite Mining Industry

Name	Address	Location of Plant
The Actinolite Mining Co., Ltd.....	Bloomfield, N.J.....	Kaladar Township, Ont.

## Asbestos Mining Industry

<b>QUEBEC—</b>		
Asbestos Corporation of Canada, Ltd.....	Canada Cement Bldg., Montreal.....	King, Thetford Tp. Beaver, Coleraine Tp. British Canadian
Asbestos Mines, Ltd.....	282 St. Catherine St., Montreal.....	Boston, Broughton Tp. Vimy Ridge, Ireland Tp.
Bennett-Martin Asbestos and Chrome Mines Ltd.	Thetford Mines.....	Thetford, Thetford Tp. Union, Coleraine Tp. Imperial, Coleraine Tp. Southward, Coleraine Tp.
Black Lake Asbestos and Chrome Co., Ltd.....	282 St. Catherine St., Montreal.....	Coleraine
Canada Asbestos & Chrome Co.....	Black Lake.....	Jeffrey, Shipton Tp.
Canadian Johns-Manville Co., Ltd.....	450 St. James St., Montreal.....	Thetford, Thetford Tp.
Consolidated Asbestos, Ltd.....	Phillips Square, Montreal.....	Federal, Thetford Tp.
Federal Asbestos Co.....	Phillips Square, Montreal.....	Johnson's, Thetford Tp. Johnson's, Coleraine Tp.
Johnson's Company.....	Thetford Mines.....	Bell, Thetford Tp. Maple Leaf, Coleraine Tp.
Kensbey and Mattison Co.....	Ambler, Penn., U.S.A.....	Pennington, Thetford Tp.
Maple Leaf Asbestos Corp., Ltd.....	Thetford Mines.....	Quebec, Broughton Tp.
Northern Asbestos Co.....	Thetford Mines.....	
Pennington Asbestos Co.....	Thetford Mines.....	
Quebec Asbestos Corporation.....	East Broughton.....	
<b>ONTARIO—</b>		
Porcupine Asbestos Mining Syndicate.....	Timmins.....	Bowman, Deloro.

## Barytes Mining Industry

<b>NOVA SCOTIA—</b>		
Brandram-Henderson, Ltd.....	Montreal, P.Q.....	Lake Ainslie, Inverness County.

## The Coal Mining Industry\*

<b>NOVA SCOTIA—</b>		
Acadia Coal Co., Ltd.....	Stellarton.....	<i>District—</i> Pictou.
Anglo Coal Co., Ltd.....	Glace Bay.....	Cape Breton.
Athol Coal Co.....	Athol.....	Cumberland.
Boston Coal Co.....	River Hebert.....	Cumberland.
Bras d'Or Coal Co.....	Little Bras d'Or Bridge.....	Cape Breton.
Carter Coal Co.....	Maccan.....	Cumberland.
Cumberland Railway & Coal Co.....	Glace Bay.....	Cape Breton.
Dominion Coal Co., Ltd.....	Glace Bay.....	Cape Breton.
Emmerson Coal Co., Ltd.....	River Hebert.....	Cumberland.
Fundy Mining Co.....	Joggins Mines.....	Cumberland.
Greenwood Coal Co., Ltd.....	Thorburn.....	Pictou.
Indian Cove Coal Co., Ltd.....	Sydney Mines.....	Cape Breton.
Intercolonial Coal Mining Co.....	Westville.....	Pictou.
Inverness Railway and Coal Co.....	Inverness.....	Inverness.
Lawson Coal Co.....	Amherst.....	Cumberland.
Maritime Coal, Railway and Power Co., Ltd.	Joggins Mines.....	Cumberland.
Minudie Coal Co., Ltd.....	River Hebert.....	Cumberland.
National Coal Co., Ltd.....	New Glasgow.....	Cumberland.
Nova Scotia Steel and Coal Co., Ltd.....	Sydney Mines.....	Cape Breton.
Port Hood Coal Co. (D. Prendergast)	Port Hood.....	Inverness.
Provincial Mining Co. (Twin Seam Coal Co.)	Chignecto.....	Cumberland.
River Hebert Coal Co.....	River Hebert.....	Cumberland.
Sterling Coal Co.....	River Hebert.....	Cumberland.
Victoria Coal Co., Ltd.....	River Hebert.....	Cumberland.
<b>NEW BRUNSWICK—</b>		
Avon Coal Co., Ltd.....	St. John.....	<i>County—</i> Queens.
Coakley, M.....	Minto.....	Sunbury.
McDougall Bros.....	Minto.....	Queens.
Minto Coal Co., Ltd.....	St. John.....	Queens.
Miramichi Lumber Co., Ltd.....	Minto.....	Queens.
Reade, L. W. (c/o Grand Lake Coal Co.).....	Minto.....	Sunbury.
Rothwell Coal Co., Ltd.....	Rothwell.....	Queens.
Welton, Harvey.....	Minto.....	Queens.
Welton & Henderson.....	Minto.....	Grand Lake.
		Queens.

## The Coal Mining Industry—Continued

Name	Address	Location of Plant
<b>SASKATCHEWAN—</b>		
Addie, W.	Estevan	Municipality— Near Estevan.
Bienfait Mine	Bienfait	Near Bienfait.
Big Lump Coal Co. (formerly Bourgoin & Smith).	Estevan	Near Estevan.
Crescent Collieries, Ltd.	Bienfait	Near Bienfait.
Eastern Collieries of Bienfait, Ltd.	Estevan	Near Estevan.
Estevan Coal and Brick Co., Ltd.	Box 210, Estevan	Near Estevan.
Lignite Coal Mines, Ltd. (formerly Andrew A. Miller).	c/o T. P. Roberts, Taylorton.	Taylorton.
Mackenzie, Geo. A. (formerly Western Collieries, Ltd.)	110 P. Burns Bldg., Calgary, Alta.	Roche Percee.
Manitoba and Saskatchewan Coal Co., Ltd.	503 Ave. Block, Winnipeg, Man.	Bienfait.
Nice, A.	Estevan	Near Estevan.
Nicholson, H.	Estevan	Near Estevan.
Pierre McCallum, Ltd. (formerly Bienfait Commercial Co.)	Bienfait	Near Bienfait.
Shand Brick and Coal Co.	Shand.	Shand.
Western Dominion Collieries	305 Trust and Loan Bldg., Winnipeg, Man.	Taylorton.
<b>ALBERTA—</b>		
<i>Bituminous—</i>		
Blue Diamond Coal Co., Ltd.	602 Standard Bank Bldg., Toronto, Ont.	District— Jasper Park.
Brazeau Collieries, Ltd.	Nordeg.	Brazeau.
Cadomin Coal Co., Ltd.	282 Main St., Winnipeg, Man.	Mountain Park.
Cannore Coal Co., Ltd.	Cannore.	Cannore.
Hillcrest Collieries	Hillcrest.	Crow's Nest Pass.
International Coal Co., Ltd.	Coleman	Crow's Nest Pass.
Luscar Collieries, Ltd.	708 Tegler Bldg., Edmonton	Mountain Park.
McGillivray Creek Coal Co.	Coleman	Crow's Nest Pass.
Mohawk Bituminous Mines, Ltd.	414 Lancaster Bldg., Calgary	Crow's Nest Pass.
Mountain Park Coal Co.	708 Tegler Bldg., Edmonton	Mountain Park.
Pass Bituminous Collieries, Ltd.	Burmis	Crow's Nest Pass.
West Canadian Collieries, Ltd.	Blairmore.	Crow's Nest Pass.
<i>Sub-bituminous—</i>		
Alexo Coal Mining Co., Ltd.	Alexo	Saunders.
Balkan Coal Co., Ltd.	Robb	Yellowhead.
Bighorn and Saunders Creek Collieries	Saunders	Saunders.
Blackstone Coal Co., Ltd.	733 Regler Bldg., Edmonton	Yellowhead.
Coal Valley Mining Co., Ltd.	806 McLeod Bldg., Edmonton	Yellowhead.
Estel, L. (Glacier Coal Co., Ltd.)	Lundbreck	Pincher Creek.
Foothills Collieries, Ltd.	222 Portage Ave., Winnipeg, Man.	Yellowhead.
Saunders Ridge Coal Co.	Coalspur	Yellowhead.
Stanley, C. H. (formerly Acorn Coal Co., Ltd.)	West Saunders	Saunders.
Sterling Collieries, Ltd.	911 McLeod Bldg., Edmonton	Yellowhead.
Superior Collieries, Ltd.	3 McDougall Court, Edmonton	Yellowhead.
<i>Lignite—</i>		
Ajax Coal and Mining Co.	Medicine Hat	Medicine Hat.
Alberta Block Coal Co., Ltd.	Drumheller	Drumheller.
Anderson, W. J.	Sheerness	Hanna.
Ardley Hardite Collieries, Ltd.	Ardley	Trochu.
Atlas Coal Co., Ltd.	Drumheller	Drumheller.
Bay Coal Co., Ltd.	Taber	Taber.
Big Valley Collieries	Box 34, Edmonton	Big Valley.
Bish Bros. and Le Gear	Forestburg	Battle River.
Blackfoot Indian Agency	Gleichen	Gleichen.
Bray, Ed.	Alix	Trochu.
Bush Mine Coal Co.	11213-65th St., Edmonton	Clover Bar.
Caledonian Collieries, Ltd.	Drumheller	Drumheller.
Canadian Coal Co., Ltd.	206 Quebec Bldg., Edmonton	Cardiff.
Canadian Dinant Coal Co.	Dinant	Camrose.
Canadian Pacific Railway Co.	Dept. of Natural Resources, Calgary	Banff.
Capital Collieries, Ltd.	Wayne	Lethbridge.
Carbon Gem Mine Co.	Carbon	Carbon.
Challenger Coal Co.	Ardley	Trochu.
Chappell, E. (formerly North American Collieries)	Tofield	Camrose.
Chinook Coal Co.	117 Sherlock Bldg., Lethbridge	Lethbridge.
City of Lethbridge Coal Mines	Lethbridge	Lethbridge.
Commonwealth Coal Co., Ltd. (formerly Oscar Collieries, Ltd.)	Sheerness	Hanna.
Consolidated Diamond Collieries, Ltd.	Diamond City	Lethbridge.
Co-operative Coal Co.	Elcan	Taber.
Craig Coal Co., Ltd.	Drumheller	Drumheller.
Crown Coal Co. (Penn. Coal Co., Ltd.)	1351-82nd St., Edmonton	Edmonton.
Dawson Coal Co., Ltd.	7 McDougall Court, Edmonton	Edmonton.
Dobell Coal Co., Ltd.	138 St. Peter St., Quebec, P.Q.	Tofield.
Donaldson, C. S., Coal Co.	Suite 1, Hill Block, Lethbridge	Lethbridge.
Edmonton Collieries, Ltd.	10117-102nd St., Edmonton	Edmonton.
Elgin Coal Co., Ltd.	Drumheller	Drumheller.
Ellis Coal Co., Ltd.	Box 46, Three Hills	Three Hills.
Excelsior Collieries, Ltd.	11th Ave. and 11th St. W., Calgary	Wayne.
Fraser-McKay Collieries	10055-101st St., Edmonton	Clover Bar.
Gibson Collieries	Drumheller	Drumheller.
Great West Coal Co., Ltd. (Black Diamond Mine).	10026-101A Ave., Edmonton	Clover Bar.

## The Coal Mining Industry\*—Continued

Name	Address	Location of Plant
<b>ALBERTA—Concluded—</b>		
<i>Lignite—Concluded—</i>		
Great West Coal Co., Ltd. (Star Mine).....	506 Lombard Bldg., Winnipeg, Man.	<i>District—</i> Rosedale.
Humberstone Coal Co., Ltd.....	11213-65th St., Edmonton	Clover Bar.
Hy-Grade Coal Co.....	Drumheller.	Drumheller.
Ideal Coal Co.....	28 Mackie Blk., Calgary.	Wayne.
Jewel Collieries, Ltd.....	Wayne.	Wayne.
Keith Fulton Coal Co.....	Clover Bar.	Clover Bar.
Kleenbirn Collieries, Ltd.....	Eyremore.	Brooks.
Lakeside Coals Co., Ltd.....	711 Tegler Bldg., Edmonton	Wabamun.
Lethbridge Coal Co.....	Box 784, Lethbridge.	Lethbridge.
Majestic Coal Co., Ltd.....	Taber.	Taber.
Marcus Coal Mines, Ltd. (formerly McIntyre & Sons).....	914 McLeod Bldg., Edmonton	Clover Bar.
Midland Collieries, Ltd.....	Midlandvale.	Drumheller.
Mid-West Collieries, Ltd.....	Drumheller.	Drumheller.
Moonlight Coal Co., Ltd.....	Rosedale Station.	Rosedale.
National Collieries.....	Round Hill.	Camrose.
Newcastle Coal Co., Ltd.....	Drumheller.	Drumheller.
Newcastle Junior Mining.....	Drumheller.	Drumheller.
North American Collieries, Ltd.....	909 Lancaster Bldg., Calgary.	Lethbridge.
North Star Coal Co.....	Cardiff.	Pembina.
Oliphant, John.....	Taber.	Cardiff.
Otterwell Coal Mine.....	Clover Bar.	Taber.
Palisade Coal Co.....	Three Hills.	Clover Bar.
Partridge Coal Co.....	Rosedale Station.	Three Hills.
Peerless Carbon Coal Mines, Ltd.....	Carbon.	Rosedale.
Peerless Carbon Collieries, Ltd.....	Carbon.	Carbon.
Redcliff Brick and Coal Co., Ltd.....	Box 135, Redcliff.	Carbon.
Reid & Brown, c/o Premier Coal Co., Ltd.....	11247-69th St., Edmonton	Medicine Hat.
Rosedale Coal Co., Ltd.....	Rosedale.	Edmonton.
Rose Deer Coal Mining Co., Ltd.....	Wayne.	Rosedale.
Rosemount Coal Co., Ltd.....	Rosedale.	Wayne.
Round Hill Collieries, Ltd.....	Round Hill.	Rosedale.
Shannon Coal Co., Ltd.....	Carbon.	Camrose.
Spicer Coal Co., Ltd.....	Dinant.	Carbon.
Standard Coal Co.....	Box B, Wayne.	Camrose.
Stoney Creek Collieries, Ltd.....	Camrose.	Wayne.
Sturgeon Valley Collieries, Ltd.....	Carbondale.	Camrose.
Superior Grade Coal Co.....	Wayne.	Namao.
Thomas, I. D., Coal Co.....	Nacmine.	Wayne.
Tofield Coal Co.....	Tofield.	Drumheller.
Vimy Coal, Light and Power Co.....	Big Valley.	Tofield.
Warneboldt, Julius.....	Sheerness.	Big Valley.
Western Commercial Co., Ltd.....	Wayne.	Hanna.
Western Gem Coal Co., Ltd.....	Drumheller.	Wayne.
		Drumheller.
<b>BRITISH COLUMBIA—</b>		
Canadian Collieries, Ltd.....	600 Belmont Bldg., Victoria.	<i>District—</i> Island.
Coalmont Collieries, Ltd.....	Coalmont.	Inland.
Corbin Coal and Coke Co.....	Corbin.	Crow's Nest Pass.
Crow's Nest Pass Coal Co.....	Fernie.	Crow's Nest Pass.
East Wellington Coal Co.....	Box 633, Nanaimo.	Island.
Fleming Coal Co., Ltd.....	Merritt.	Inland.
Granby Con. Mg. S. & P. Co.....	Cassidy, V.I.	Inland.
Keystone Coal Co., Ltd.....	Merritt.	Inland.
King & Foster.....	Box 655, Nanaimo.	Inland.
Middlesboro Collieries, Ltd.....	Middlesboro.	Inland.
Nanosee Wellington Collieries, Ltd.....	Wellington.	Inland.
Princeton Coal and Land Co.....	Princeton.	Inland.
Western Fuel Corporation of Canada.....	Nanaimo.	Inland.

\*Operators producing 500 tons or over, per month.

## The Feldspar Industry

<b>MINES—</b>		
<b>QUEBEC—</b>		
Cameron, J. & J.....	Box 11, Buckingham.	Buckingham Tp.
Canadian Amber Mica Co.....	Box 246, Montreal.	Portland W. Tp.
Couture, Louis.....	Glen Almond.	Buckingham Tp.
Lapointe, E.....	Notre Dame de la Salette.	Portland W. Tp.
Laurentian Feldspar Co., Ltd.....	86 Notre Dame St., W. Montreal.	Portland Tp.
O'Brien and Fowler.....	Bk. of Nova Scotia Bldg., Ottawa.	
St. Lawrence Feldspar, Ltd.....	Ont.	Derry Tp.
Winning, Bush.....	55 St. Francois Xavier St., Montreal	Saguenay Co.
	N.D. de la Salette.	Portland Tp.
<b>ONTARIO—</b>		
Anderson, J. G.....	Lucknow.	Dryden, Davis, & Head,
		James Tps.
Cameron, John A.....	Madawaska.	Murchison Tp.
Checkley, H. R.....	Sudbury.	Dill Tp.
Craig, T. H.....	Verona.	Portland Tp.
Feldspars, Ltd.....	293 Bay St., Toronto.	Bedford, Portland and Loughborough Tps.

## The Feldspar Industry—Concluded

Name	Address	Location of Plant
<b>MINES—Concluded</b>		
<b>ONTARIO—Concluded</b>		
Feldspar Mines Corp., Ltd.	1507 Bank of Hamilton, Toronto.	Monteagle Tp.
Feldspar Quarries, Ltd.	60 Front St., Toronto.	Portland Tp.
Genesee Feldspar Co.	82 Augustine St., Rochester, N.Y.	Monteagle Tp.
Holditch, W. E.	Sudbury.	Dill Tp.
Hurlburt, G. W.	Ess Creek.	Stacey Quarry.
Industrial Minerals Corp.	805 Bank of Hamilton, Toronto.	Monmouth Tp.
Kemp Feldspar Co.	Toronto.	Dill Tp.
MacMaster, Duncan.	Markstay.	Markstay.
McQuire-Robinson.	Parry Sound.	Conger Tp.
Martin, E. L.	Kingston.	Bedford Tp.
Perth Feldspar & Mining Co., Ltd.	Perth.	Bathurst Tp.
Rock Products Co.	Nicholas Bldg., Toledo, Ohio, U.S.A.	Bathurst Tp.
<b>MILLS—</b>		
<b>ONTARIO</b>		
Feldspar Milling Co., Ltd.	33 Richmond St. W., Toronto.	Toronto.
Frontenac Floor and Wall Co., Ltd.	Kingston.	Kingston.

## The Fluorspar Industry

<b>ONTARIO—</b>		
Campbell, Charles.	Walker House, Toronto.	Madoc.
Cross & Wellington.	Madoc.	Huntingdon Tp.
Noyes Mining Co., Ltd.	Peterboro.	Huntingdon Tp.

## Garnets

<b>ONTARIO—</b>		
Boyle, Robin.	18 Toronto St., Toronto.	Renfrew Co.

## The Graphite Industry

<b>QUEBEC—</b>		
Canadian Graphite Corporation.	425 Phillip's Place, Montreal.	Boyer Township.
North American Graphite Co.	50 Spadina Ave., Toronto.	Buckingham Tp.
Quebec Graphite Co., Ltd.	4 Fenchurch, London, E.C.	Lochaber Township.
<b>ONTARIO—</b>		
Black Donald Graphite Co., Ltd.	Calabogie.	Brougham Township.

## The Grindstone Industry

<b>NOVA SCOTIA—</b>		
Mic-Mac Grindstone Co., Ltd.	Woodburn.	Woodburn.
Sutherland, Jas. W.	Quarry Id.	Quarry Id.
<b>NEW BRUNSWICK—</b>		
The Miramichi Quarry Co., Ltd.	Quarryville.	Quarryville.
The Read Stone Co., Ltd.	Sackville.	Stonehaven.
<b>BRITISH COLUMBIA—</b>		
MacDonald, J. A. and C. H.	Vancouver.	

## The Gypsum Industry

<b>NOVA SCOTIA—</b>		
Higginson Manufacturing Co.	Newburg, N.Y.	Newport Station, Hants Co.
Ingonish Gypsum Co., Ltd.	Canada Cement Bldg., Montreal, Que.	Victoria Co.
Iona Gypsum Products Co.	Box 60, Sydney.	Iona.
Newark Plaster Co.	Ottawa Brook.	Ottawa Brook, Victoria Co.
O'Neill, P. M., Gypsum Co.	Box 2223 Montreal.	Cheticamp.
Rock Plaster Corp.	40 Rector St., New York, N.Y.	Walton, Hants Co.
St. Croix Gypsum Mining & Mfg. Co., Ltd.	St. Croix.	St. Croix, Hants Co.
Wentworth Gypsum Co., Ltd.	Windsor.	Wentworth, Hants Co.
Windsor Plaster Co., Ltd.	Windsor.	Windsor, Hants Co.
<b>NEW BRUNSWICK—</b>		
Albert Manufacturing Co.	Hillsborough.	Hillsborough, Albert Co.
Hillsborough Plaster, Quarrying and Manufacturing Co.	Hillsborough.	Edgetts Landing, Albert Co.
<b>ONTARIO—</b>		
The Ontario Gypsum Co., Ltd.	Paris.	Caledonia, Seneca Tp. Lythmore, Oneida Tp.
<b>MANITOBA—</b>		
Manitoba Gypsum Co., Ltd.	Box 3057, Winnipeg.	Gypsumville.
<b>BRITISH COLUMBIA—</b>		
Basque Ranch Ltd.	Vancouver.	Basque Ranch.

## The Iron Oxide Mining Industry

Name	Address	Location of Plant
<b>QUEBEC—</b>		
Argall, Thos. H.....	Three Rivers.....	Point du Lac, St. Maurice Co.
Canada Paint Co., Ltd.....	572 William St., Montreal.....	Red Mill, Champlain Co.
Montmorceny Paint Products Co., Ltd.....	6 d'Aiguillon St., Quebec.....	Montmorceny Co.
<b>BRITISH COLUMBIA—</b>		
McDonald, R. W.....	823 Fifth Ave. West, Calgary, Alta.....	Windermere District.

## The Magnesite Industry

<b>QUEBEC—</b>		
International Magnesite Co., Ltd.....	Calumet.....	Hartington Township.
North American Magnesite Producers, Ltd.....		Grenville Township.
Scottish Canadian Magnesite Co.....	Magnesite.....	Grenville Township.

## The Mica Industry

<b>QUEBEC—</b>		
Ahearn, W.....	538 McLaren St., Ottawa, Ont.....	Hull Tp.
Argall, W. A.....	Laurel.....	Argentueil Co.
Blackburn Bros.....	Union Bank Bldg., Ottawa, Ont.....	Templeton Tp
Brown, C. C. and J. F.....	Cantley.....	
Canadian Amber Mica Co.....	246 Station B, Montreal.....	Portland W. Tp.
Cheslock, Isidore.....	High Falls.....	Portland W. Tp.
Cross, W. C.....	Cascades.....	Hull Tp.
De Rainville, J.....	St. Pierre de Wakefield.....	
Flynn, H. T.....	106-8 Montcalm St., Hull.....	Hull Tp.
Gatineau Valley Mining Co.....	Hull.....	Wakefield.
Laurentide Mica Co., Ltd.....	119 Queen St. W., Ottawa, Ont.....	East Templeton Tp.
Lawlor, Thos.....	Wrightville.....	
McLaurin, John.....	St. Rose de Lima.....	Templeton.
McGlashan, R. J. & Co.....	Cantley.....	Hull Tp.
Maisonneuve, H.....	Perkins Mills.....	
Martin, A. G.....	River Desert.....	Cameron Tp.
Morris, J.....	Wilson's Corners.....	Wakefield Tp.
Poulin & Holmes.....	Cantley.....	Hull Tp.
Wallingford Mica and Mining Co., Ltd.....	Perkins.....	Templeton Tp. <sup>1</sup>
Watts and Noble.....	217 Lyon St., Ottawa, Ont.....	Portland W. Tp.
Wilson, S. E.....	Cascades.....	
Winning, Bush.....	Notre Dame de la Salette.....	Portland Tp.
<b>ONTARIO—</b>		
Brown and Fahey.....	Elgin.....	Loughborough. Tp.
Gould Lake Mining Association.....	Sydenham.....	
Kent Bros. and Estate J. M. Stoness.....	Kingston.....	Loughborough Tp.
Iee, W. W.....	Bedford Mills.....	
McFadden, R. J.....	Sydenham.....	
McNamara, H. E.....	Sydenham.....	
McLaren, W. L.....	Perth.....	
Martin, A. G.....	231 Beeserei St., Ottawa.....	Loughborough Tp.
Roberts, P. H.....	Sydenham.....	Frontenac Tp.
Sills, A. C.....	Sydenham.....	Loughborough Tp.
Sullivan and Rogers.....	Portland.....	Bastard Tp.
The Loughborough Mining Co., Ltd.....	Sydenham.....	Loughborough Tp.
Trousdale, P. J.....	Sydenham.....	
Wood, F. J.....	Godfrey.....	

## The Natural Gas Industry

<b>NEW BRUNSWICK—</b>		
New Brunswick Gas & Oilfields, Ltd.....	Box 196, Moncton.....	Stony Creek, Albert Co.
<b>ONTARIO—</b>		
Aldrich Gas and Oil Co., Ltd.....	Merchants' Bank Bldg., Hamilton...	Rainham Tp.
Allied Gas and Oil Co. (formerly Clover Gas & Oil Co.).....	Welland.....	Moulton Tp.
Attercliffe Gas Co.....	Attercliffe.....	Canboro Tp.
Azoff Gas Co.....	Canfield.....	North Cayuga Tp.
Beer, Geo.....	Binbrook.....	Binbrook Tp.
Bennett, J.....	Ridgetown.....	Howard Tp.
Bertie Natural Gas Co., Ltd.....	Ridgeway.....	Bertie Tp.
Binbrook Gas Co.....	Binbrook.....	Binbrook Tp.
Caledon Natural Gas Fields, Ltd.....	Hamilton.....	Caledon Tp.
Canada Cement Co., Ltd.....	Montreal, Que.....	Humberstone Tp.
Canby, B. F.....	R. R. 2, Marshville.....	Wainfleet Tp.
Canboro Gas & Oil Co.....	Selkirk.....	Canboro, Cayuga N., Rainham and Seneca Tps.
Canfield Natural Gas Co.....	Canfield.....	Cayuga N. Tp.
Castle Oil and Gas Co.....	Imperial Bank Chambers, Niagara Falls.....	Euphemia Tp.
Chippawa Development Co., Ltd.....	Chippawa.....	Willoughby Tp.
Chippawa Oil and Gas Co., Ltd.....	Tavistock.....	Caistor and Gainsboro Tps.
Coleman, J. A.....	Wellandport.....	Wainfleet and Gainsboro Tps.

## The Natural Gas Industry—Continued

Name	Address	Location of Plant
<b>ONTARIO—Concluded</b>		
Dominion Natural Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y., U.S.A.	Bayham, Binbrook, Caistor, Canboro, Cayuga N., Cayuga S., Charlotteville, Dunn, Glandford, Houghton, Humberstone, Malahide, Middleton, Moulton, Oakland, Oneida, Onondaga, Rainham, Seneca, Walpole, Walsingham N., Walsingham S., Windham, Woodhouse Tps.
Dunn Natural Gas Co., Ltd.	Dunnville.	Dunn and Sherbrooke Tps.
Eastside Gas Co.	R. R. 2, Lowbanks.	Sherbrooke.
Empire Limestone Co.	19 Hudson St., Buffalo, N.Y., U.S.A.	Humberstone Tp.
Fisherville Gas Co.	Fisherville.	Rainham Tp.
Hamilton Gas and Oil Co.	17 Main St., E., Hamilton.	Seneca Tp.
Hart and Harrington.	Attercliffe Station.	Canboro Tp.
Hoffman, Albert.	Dunnville.	Moulton Tp.
Hoover, D. E.	Selkirk.	Rainham Tp.
Industrial Natural Gas Co., Ltd.	Thorold.	Bertie, Crowland, Humberstone Tps.
Jasperson, B.	Kingsville.	Tilbury East and Gosfield South Tps.
Jones, J. S.	Port Maitland.	Dunn Tp.
Kindy, D. and Son.	Selkirk.	Rainham.
King Gas Co., Ralph.	Hamilton.	Charlotteville, Middleton, Rainham, Seneca, Walpole Tps.
Lalor, F. R.	Dunnville.	Moulton Tp.
Lawson, J. J.	Stromness.	Moulton Tp.
Maple Leaf Gas Co.	48 St. John's Rd., Buffalo, N.Y., U.S.A.	Moulton Tp.
Marshall, Jas.	Hamilton.	Glanford and Seneca Tps.
May, A. G.	Selkirk.	Seneca Tp.
Medina Natural Gas Co., Ltd.	Box 339, Chatham.	Bayham and Houghton Tps.
Michener E. C.	Marshville.	Wainfleet and Gainsboro Tps.
Midfield Gas Co., Ltd.	9 Maple Ave., Hamilton.	N. Cayuga, Oneida Tp.
Niece, Hosea and Son.	Lowbanks.	Sherbrooke Tp.
Northern Gas and Gasoline Co.	Hepworth.	Amabel Tp.
North Shore Gas Co., Ltd.	Selkirk.	Rainham Tp.
Oil Springs Oil & Gas Co., Ltd.	Oil Springs.	Enniskillen Tp.
Petrol Oil & Gas Co., Ltd.	301 York Bldg., Toronto.	Dover West Tp.
Pilkington Bros., Ltd.	St. Catharines.	Crowland Tp.
Port Colborne-Welland Natural Gas and Oil Co., Ltd.	Port Colborne.	Oneida, Onondaga, and Seneca Tps.
Progressive Oil and Gas Co.	212 Main & Hughson St., Hamilton.	N. Dorchester Tp.
Provincial Natural Gas & Fuel Co. of Ontario, Ltd.	103 Queen St., Niagara Falls.	Bertie, Crowland, Humberstone, Wainfleet, Willoughby Tps.
Root, Mrs. Esther.	Dunnville.	Cayuga, S.
Sarnia Gas & Oil Co.	145½ Front St., Sarnia.	Sarnia Tp.
Smith, R. H.	Lowbanks.	Moulton Tp.
Southern Ontario Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y., U.S.A.	Gosfield, Mersea, Romney, Raleigh, Tilbury East Tps.
Sparham, A. F.	Caledonia.	Glanford Tp.
Springvale Gas & Oil Co.	Hagersville.	Walpole Tp.
Sterling Gas Co., Ltd.	Port Colborne.	Humberstone, Moulton, Sherbrooke and Wainfleet Tps.
Stevensville Gas & Fuel Co., Ltd.	Stevensville.	Bertie Tp.
Sundy Gas and Oil Co.	Dunnville.	Canboro Tp.
Union Natural Gas Co. of Canada, Ltd.	48½ Market St., Chatham.	Dawn, Dover W., Raleigh, Romney, Tilbury E. Tps.
United Gas Companies, Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Canboro, Cayuga N., Moulton, Seneca and Wainfleet Tps.
Vacuum Oil & Gas, Ltd.	509 Lumsden Bldg., Toronto.	Dover West and Middleton Tps.
Van Sickle, A. W.	Onondaga.	Onondaga Tp.
Wainfleet-Moulton Gas Co.	R. R. 1, Lowbanks.	Moulton and Wainfleet Tps.
<b>MANITOBA—</b>		
Haskill, E. C.	Box 64, Treherne.	Treherne.
<b>ALBERTA—</b>		
Alberta Clay Products Co., Ltd.	Box 672, Medicine Hat.	Medicine Hat.
British Petroleum Ltd.	918 Rogers Bldg., Vancouver, B.C.	Wainwright.
Canada Cement Co., Ltd.	Canada Cement Co., Bldg., Montreal.	Dauntless.
Canadian Pacific Railway Co.	Montreal, Que.	Medicine Hat.
Canadian Western Natural Gas, Light, Heat & Power Co., Ltd.	215-6th Ave. West, Calgary.	Near Barnwell; Bow Island; Brooks; Dunmore; and Calgary.
Canadian Western Power & Fuel Co.	Redcliff.	Redcliff.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Redcliff.
Hedley Shaw Milling Co., Ltd.	Medicine Hat.	Medicine Hat.

## The Natural Gas Industry—Concluded

Name	Address	Location of Plant
<i>ALBERTA—Concluded</i>		
Jennings Refining Co., Ltd.	315 Maclean Block, Calgary	Turner Valley.
Medicine Hat, Corporation of	Medicine Hat	Medicine Hat.
Northwestern Utilities Ltd.	10305 Jasper Ave., Edmonton	Viking.
Northwest Co., Ltd.	56 Church St. Toronto, Ont.	
Ogilvie Flour Mills Co., Ltd.	Medicine Hat	Medicine Hat.
Redcliff Brick & Coal Co., Ltd.	Redcliff	Redcliff.
Royalite Oil Co., Ltd.	239-6th Ave., Calgary	Turner Valley.
Southern Alberta Oils, Ltd.	Calgary	Turner Valley.
Suffield, Village of	Suffield	Suffield.
Town of Bow Island	Bow Island	Bow Island.
Wetaskiwin, Corporation of	Wetaskiwin	Wetaskiwin.
United Electric & Engineering Co., Ltd.	1721-11th St. West, Calgary	Bassano.

## The Petroleum Industry

<i>NEW BRUNSWICK—</i>		
New Brunswick Oil and Gasfields, Ltd.	Box 196, Moncton	Stony Creek, Albert Co.
<i>ONTARIO—</i>		
Ajax Oil and Gas Company	509 Lumsden Bldg., Toronto	Raleigh Tp.
Anderson Bros. & Thompson	Oil Springs	Enniskillen Tp.
Anderson, J. H.	Oil Springs	"
Atkinson, John	R.R. No. 3, Petrolia	Plympton Tp.
Bailey, John R.	R.R. No. 3, Petrolia	Moore Tp.
Barrett, C. H.	Petrolia	Enniskillen Tp.
Bothwell Oil Co., Ltd.	120 Bay St., Toronto	Zone Tp.
Braybrook, J. T.	R.R. No. 3, Petrolia	Enniskillen Tp.
Brook, Thos. A.	Petrolia	"
Brydges, Ed. O.	R.R. No. 3, Petrolia	"
Canada Crude Oil Producers Ltd.	Confederation Life Bldg., Toronto	"
Canadian Dutch Oil, Ltd.	7 Adelaide St., E., Toronto	Onondaga Tp.
Canadian Oil Producing and Refining Co., Ltd.	Petrolia	Enniskillen Tp.
Carleton, George	R.R. No. 2, Petrolia	"
Carman and Fairbank	Petrolia	Zone Tp.
Crocker-Parks Oil Co., Ltd.	Oil Springs	Enniskillen Tp.
Crotty and Elliott	Bothwell	Zone Tp.
Darling, Arthur C.	Petrolia	Enniskillen Tp.
Dempsey, James	Petrolia	"
Donald, Geo.	Oil Springs	Enniskillen Tp.
Duncan Bros.	Petrolia	Moore Tp.
Edward, F. H.	Petrolia	Enniskillen Tp.
Erie Investments, Ltd.	320 Bay St., Toronto	Mosa Tp.
Fairbank, C. O.	Petrolia	Zone Tp.
Fairbank, J. H., Estate	R.R. No. 4, Petrolia	Enniskillen Tp.
Goudie, John	R.R. No. 3, Petrolia	"
Heal, John	Corunna	Moore Tp.
Hillis, James T. and Sons	Oil Springs	Enniskillen Tp.
Houston, King, Estate of	382 Richmond St., London	Enniskillen Tp.
Howlett, Fred	Box 3, Petrolia	"
Jewell, Dan	Oil Springs	"
Johnson, Thos	Petrolia	"
Kerr, John, Estate	Petrolia	"
Kerr, Mrs. Ross	Sarnia	"
Lern, Chas.	Petrolia	Moore Tp.
Lewis, John J. Estate	Oil Springs	Enniskillen Tp.
McDougall, D.	Petrolia	Enniskillen Tp.
McGillivray, Geo. A.	London	"
McLellan, Peter	Corunna	Moore Tp.
McPhedran, John	R.R. No. 3, Petrolia	Enniskillen Tp.
McManus, Alex.	R.R. No. 1, Wyoming	Plympton Tp.
Maitland, Jas. B.	R.R. No. 2, Sarnia	Sarnia Tp.
Maw, Frank	R.R. No. 3, Petrolia	Enniskillen Tp.
Miller, Frank J.	R.R. No. 2, Sarnia	Sarnia Tp.
Miller, S. M.	R.R. No. 3, Petrolia	Moore Tp.
Miller, W. W.	R.R. No. 3, Petrolia	"
Montgomery, Thos.	R.R. No. 3, Petrolia	Enniskillen Tp.
Morningstar, R. B. & L. H.	Oil Springs	"
Morris, Geo.	Petrolia	"
Mott and Mitchell	Oil Springs	"
Mutual Oil Producing Co.	Box 539, London	"
Neath, Arthur	Chatham	Raleigh Tp.
Onondaga Oil and Gas Ltd.	Room 8, Temple Bldg, Brantford	Onondaga Tp.
Ontario Lands and Oil Co., Ltd.	Petrolia	Enniskillen Tp.
Ontario Petroleum Co.	Glencoe	Mosa Tp.
Osborne Oil Producers, Ltd.	Box 700, Petrolia	Moore Tp.
Parks, Mrs. E. M.	R.R. 3, Petrolia	Enniskillen Tp.
Paul, John D.	R.R. No. 1, Wyoming	Plympton Tp.
Peace River Development	1 Mail Bldg., Toronto	Dunwich Tp.
Rainsberry, Ed. L.	Petrolia	Sarnia Tp.
Rainsberry, Nicholas J.	R.R. No. 3, Petrolia	"
Rainsberry, Walter and Sons	Petrolia	Enniskillen Tp.
Rowe, E. P.	292 Rushton Rd., Toronto	Zone Tp.
Schumacher, Bowen W.	Room 1010, No. 112 West Adams St., Chicago, Ill.	Enniskillen.
Southern Ontario Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Romney Tp. & Raleigh Tp.
Sproule Bros.	Oil Springs	Enniskillen Tp.

## The Petroleum Industry—Concluded

Name	Address	Location of Plant
<b>ONTARIO—Concluded</b>		
Sproule and Johnston.....	Oil Springs.....	Enniskillen.
Taylor, P. V. & Co.....	1031 Lumber Exchange Bldg., Chicago, Ill.....	Zone Tp.
Union Natural Gas Co.....	Chatham.....	Dover Tp.
Walker Oil and Gas of Bothwell.....	129 Chatham St. W., Windsor.....	Zone Tp.
Wallen, Alex. C.....	Oil Springs.....	Enniskillen Tp.
Wallen, John, Estate.....	Oil Springs.....	"
Wallen and Wallen Estate.....	Oil Springs.....	"
Walsh, Mrs. Thos.....	Petrolia.....	"
Warwick, Jos.....	Oil Springs.....	"
Watt, P. J.....	River & View Aves., London.....	"
Woodward, J.....	Oil Springs.....	Enniskillen Tp.
Woodward, W.....	Oil Springs.....	"
<b>ALBERTA—</b>		
Canada Southern Oil and Refining Company.....	Black Diamond.....	Turner Valley Oil Field.
Sheep River Oil Company.....	422 P. Burns Bldg., Calgary.....	"
Southern Alberta Oils, Ltd.....	407 Grain Exchange Bldg., Calgary.....	"

## The Pyrites Industry

<b>QUEBEC—</b>		
Eustis Mining Co.....	Eustis.....	
<b>ONTARIO—</b>		
Grasselli Chemical Co., Ltd.....	Hamilton.....	Blythefield Tp.
Nichols Chemical Co., Ltd.....	Montreal, Que.....	"Northpines Mine," Drayton Tp.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining & Smelting Co. of Canada, Ltd.	Trail.....	"Sulphide Mine," Hungerford Tp.
Granby Consolidated Mining, Smelting & Power Co., Ltd.....	Anox.....	"Sullivan Mine," Kimberley
		"Hidden Creek," near Anox

## The Quartz Industry

<b>QUEBEC—</b>		
Coleman Bigelow.....	Buckingham.....	Buckingham Tp.
Cote, Alex.....	Buckingham.....	
O'Brien & Fowler.....	c/o M. J. O'Brien, Ltd., Ottawa, Ont.	Derry Tp.
Silico, Limited.....	103 St. Francois-Xavier, Montreal.....	Parish of St. Canut.
<b>ONTARIO—</b>		
Dominion Mines and Quarries, Ltd.....	Canada Life Bldg., 46 King St. West, Toronto.....	District of Algoma. (East Neebish Quarry and Killarney Quarry.)
Maloney, M. J.....	Marmora.....	Marmora.....
Mond Nickel Co., Ltd., The.....	Coniston.....	Neelon Tp.
Todesco, C. W.....	Jack Fish.....	Near Jack Fish.
Wright & Co.....	960 Queen St., Sault Ste. Marie.....	Deroche Tp.
<b>BRITISH COLUMBIA—</b>		
Granby Consolidated Mining, Smelting & Power Co., Ltd.....	Anox.....	Anox.

## The Salt Industry

<b>NOVA SCOTIA—</b>		
Malagash Salt Products, Ltd.....	New Glasgow.....	Malagash, Cumberland Co.
<b>ONTARIO—</b>		
Brunner-Mond, Canada, Ltd.....	Canadian Bank of Commerce Bldg., Toronto.....	Amherstburg, Essex Co.
Canadian Salt Co., Ltd.....	719 Sandwich St. W., Windsor.....	Windsor and Sandwich, Essex Co.
Dominion Salt Co., Ltd., The.....	412 N. Front St., Sarnia.....	Sarnia, Lambton Co.
Elarton Salt Works Co., Ltd.....	Warwick.....	Warwick, Lambton Co.
Exeter Salt Works Co., Ltd.....	Exeter.....	Exeter, Huron Co.
Goderich Salt Co., Ltd.....	Goderich.....	Goderich, Huron Co.
Kincardine Salt Co., Ltd.....	Kincardine.....	Kincardine.
Western Canada Flour Mills Co., Ltd.....	Goderich.....	Goderich, Huron Co.
Western Salt Co., Ltd.....	43 Victoria St., Toronto.....	Courtright, Lambton Co.
Wingham Salt Co.....	Wingham.....	Wingham, Huron Co.

**The Sodium Carbonate Mining Industry**

Name	Address	Location of Plant
<b>BRITISH COLUMBIA—</b>		
Austin, C. W. ....	70 Mile House.....	White Elephant. Lillooet.
Coulson, John A. and Son.....	Burley.....	
Lillooet Soda Co., Ltd.....	502 North West Bldg., Vancouver...	

**The Sodium Sulphate Mining Industry**

<b>SASKATCHEWAN</b>		
Bishopric and Lent Co.....	Winton Place, Cincinnati, Ohio, U.S.A.	Frederick Lake.
Salts & Chemicals, Ltd.....	207 Weber Chambers, Kitchener, Ont.	Maskakee Lake

**The Talc and Soapstone Mining Industry**

<b>QUEBEC—</b>		
Robertsonville Soapstone Quarry Co.....	Robertsonville.....	Thetford Tp.
<b>ONTARIO—</b>		
Asbestos Pulp Co., Ltd.....	Madoc.....	"Connolly Mine", Huntingdon Tp.
Gillespie Co., Ltd., Geo. H. (Mill).....	Madoc.....	Plant at Madoc.
Henderson Mines, Ltd.....	Madoc.....	"Henderson Mine," Huntingdon Tp.
<b>BRITISH COLUMBIA—</b>		
Eagle Talc and Mining Co.....	W. G. Dickinson, 627 Yates St., Victoria.....	Victoria Mining Division.

**The Tripolite Industry**

<b>NOVA SCOTIA—</b>		
Oxford Tripoli Co., Ltd.....	Oxford.....	Silica Lake.

**The Volcanic Ash Industry**

<b>SASKATCHEWAN—</b>		
Van Kel Cleasners, Ltd.....	Swift Current.....	Waldeck.

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

## The Cement Industry

Name	Address	Location
<b>QUEBEC—</b> Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal	Montreal East
<b>ONTARIO—</b> Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal Que.	Belleville Port Colborne
Hanover Cement Co., Ltd.....	371 Bay St., Toronto.....	Hanover
St. Mary's Cement Co., Ltd.....	49 Wellington St. E., Toronto.....	St. Mary's.
<b>MANITOBA—</b> Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal, Que.	Tuxedo. Babcock
Commercial Cement Co., Ltd.....	913 Union Bank Bldg., Winnipeg, ..	
<b>ALBERTA—</b> Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal, Que.	Exshaw Marlboro.
Marlboro Cement Co.....	P.O. Box 430, Edmonton.....	
<b>BRITISH COLUMBIA—</b> British Columbia Cement Co., Ltd.....	305 Belmont House, Victoria.....	Bamberton

## The Clay Products Industry—Brick and Tile

<b>PRINCE EDWARD ISLAND—</b> Prince Edward Island Brick and Tile Co.....	Dept. of Agriculture, Charlottetown	Richmond.
<b>NOVA SCOTIA—</b> Brooks, Geo.....	New Glasgow.....	Plymouth
Brooks, Stephen, and Sons.....	Box, 359, New Glasgow.....	New Glasgow.
Miller, Jas. B.....	Elmsdale.....	Barney's Brook
Nova Scotia Clay Works, Ltd.....	Havelock St., Amherst.....	Elmsdale.
Shaw, Ltd., L. E.....	Avonport.....	Pugwash. Avonport
<b>NEW BRUNSWICK—</b> Loggie Co., Ltd., W. S.....	Chatham.....	Nelson
Northampton Brick Co., Ltd.....	Woodstock.....	Northampton
Ryan and Sons, M.....	Box 575, Fredericton.....	Fredericton, Woodstock Rd.
<b>QUEBEC—</b> Alex. Mills Brick Co., The.....	Orms town.....	Orms town
Ascot Tile and Brick Co., Ltd.....	Ascot Corner.....	Ascot Corner
Bell, W. and D.....	1286 St. Valier St., Quebec.....	Little River Rd.
Citadel Brick, Ltd.....	421 St. Paul St., Quebec.....	Boischatel
Desrochers, Joseph.....	Warwick.....	Warwick.
Granby Clay Products, Ltd.....	P.O. Box 266, Granby.....	Granby
La Cie de Briques de Matane.....	Matane.....	Matane
Laliberte, Lucius.....	Deschailions.....	Deschailions
L'Industrielle de St. Tite, Ltd.....	St. Tite.....	St. Tite.
Longpre, Emile.....	St. Felix de Valois.....	St. Felix de Valois.
Metis Shale Brick Co., Ltd., The.....	St. Octave de Metis.....	Grand Remon.
National Brick Co. of Laprairie, Ltd.....	Canada Cement Co. Bldg., Montreal.	Delson. Laprairie.
Proulx & Frères.....	P.O. Box 384, Richmond.....	Richmond.
St. Lawrence Brick Co., Ltd., The.....	71 St. James St., Montreal.....	Laprairie.
Sherbrooke Brick Co., Ltd.....	Wellington St., Sherbrooke.....	Sherbrooke.
<b>ONTARIO—</b> Alvinston Brick & Tile Co., Ltd.....	Box 26, Alvinston.....	Alvinston.
Atlas Brick Co., Ltd.....	30 Toronto St., Toronto.....	Milton Heights
Baird, H. C. and Son.....	Park Hill.....	Park Hill
Baker, Geo. E.....	Arnprior.....	Arnprior.
Bartonville Pressed Brick Co., Ltd.....	620 Lister Block, Hamilton.....	Bartonville.
Batchelor, Samuel.....	Box 6, Proton.....	Proton.
Bay of Quinte Brick Works.....	239 Dundas St., Belleville.....	Belleville.
Belle River Brick and Tile Co.....	Box 80, Belle River.....	Belle River.
Booth Brick & Lumber Co., The.....	Box 61, New Toronto.....	Etobicoke
Brampton Pressed Brick Co.....	Brampton.....	Brampton
Broadwell, B., and Son.....	Kingsville.....	(Near) Kingsville
Browncombe, H. & Sons.....	Box 47, Cargill.....	Cargill.
Caledon Mountain Shale Products.....	88 St. David St., Toronto.....	Credit Forks.
Campbell, Neil F.....	R.R. No. 1, West Lorne.....	West Lorne.
Canadian Fireclay Products, Ltd.....	604 Adelaide St. E., Toronto.....	New Toronto
Canadian Pressed Brick Co., Ltd.....	63 Ottawa St., S., Hamilton.....	Bartonville.
Chapman, John.....	Napanee.....	Napanee.
Cheeseman, Peter.....	670 King St. W., Hamilton.....	Hamilton.
Cooksville Shale Brick Co., Ltd.....	26 Queen St. E., Toronto.....	Cooksville.
Cooper, W. H.....	312 Clyde Bldg., Hamilton.....	Hamilton
Cornhill, James & Sons, Ltd.....	Grand Ave. E., Chatham.....	Chatham.
Crang, Jethro.....	22 Thorne Crescent, Toronto.....	Toronto.

## The Clay Products Industry—Brick and Tile—Continued

Name	Address	Location
<b>ONTARIO—Continued</b>		
Crawford Bros.	451 King St. W., Hamilton.	Hamilton.
Curtin, Frank.	R.R. No. 4, Lindsay.	Lindsay.
Curtis Bros.	Box 809, Peterboro.	Peterboro.
DeLaplante, J. E.	Dawes Rd., Coleman P.O., Toronto.	Dawes Road.
Deller, Albert.	Brownsville.	Brownsville.
Deller Bros.	R.R. No. 2, Norwich.	(Near) Norwich.
Dolan, John.	R.R. No. 2, Watford.	Warwick.
Dominion Sewer Pipe and Clay Industries, Ltd.	Swansea.	Aldershot.
Donaldson, S. E.	R.R. 4, Harriston.	Fulton Mills.
Don Valley Brick Works.	114 Federal Bldg. Toronto.	Todmorden.
Dublin Brick & Tile Yard.	Dublin.	Dublin S.
Elliott, Charles.	Bluevale.	Bluevale.
Elliott, Wm.	Glenannan P.O.	Glenannan.
Elliott, James, Jr.	519 Wellington St., Sault Ste. Marie.	E. Korah Tp.
Forman, Stephen.	R.R. 5, St. Mary's.	St. Mary's.
Fort William Brick & Tile Co.	509 Victoria Ave., Fort William.	W. Fort William.
Fox, Geo. J.	Box 243, Dresden.	Dresden.
Frid Bros.	Macklin St. & Dundas Road, Hamilton.	Hamilton.
Gamage, C. R.	R.R. No. 2, Dresden.	Dresden.
Gardiner, Wm.	Box 83, Blenheim.	Blenheim.
Godfrey, Thomas & Co.	Carleton Place.	Carleton Place.
Grimsby Brick and Tile Co.	Grimsby.	Grimsby.
Hallatt, Herbert & Son.	Box 93, Comber.	Comber.
Hallatt, Wm.	Richards Block, Chatham.	Merlin.
Halton Brick Co., Ltd.	28 Symes Rd., West Toronto.	Near Terra Cotta.
Hamilton Pressed Brick Co.	Kensington Ave. S., Hamilton.	Hamilton.
Hill, A. W.	R. R. I., Coatsworth.	Stevenson.
Hill, Aaron.	Essex.	Essex.
Hircock Bros. & Co.	Box 83, Bowmanville.	Bowmanville.
Hitch, D. A.	Erie St. N., Ridgetown.	Ridgetown.
Hitch, Thos.	1st Ave., Box 254, St. Thomas.	St. Thomas.
Hodder, J. H.	Dutton.	Dutton.
Hohl, John.	R.R. No. 1, Wellesley.	Lisbon.
Houston Co., Ltd., The.	Tweed.	Tweed.
Howlett, Fred.	Box 3, Petrolia.	Petrolia.
Interprovincial Brick Co. of Canada, Ltd.	30 Toronto St., Toronto.	Cheltenham.
Jackson Bros.	290 Rawdon St., Brantford.	Brantford.
Janes, D. A.	R.R. No. 1, Mt. Brydges.	Mt. Brydges.
Jamieson Lime Co.	Renfrew.	Renfrew.
Jasperson B. Brick & Tile Yards.	Kingsville.	Coatsworth.
Jervis, Wm J.	Dorchester Station.	Dorchester Station.
Johnson, James, Sr.	R. R. No. 3, Pembroke.	Pembroke.
Kerr, Frederick.	Crediton.	Crediton E.
Kerr and Pettman.	Goderich.	Ben Miller.
Koebel, Joseph Z.	Box 54, St. Clements.	St. Clements.
Kruse Bros.	Seaforth.	Tuckersmith.
Labey Geo. A. and Son.	Foxboro.	Foxboro.
Lowes Bros.	R.R. No. 3, Chatham.	Chatham East.
McComb, Chester.	Denfield.	Elginfield.
McCormick Bros.	R.R. No. 5, Watford.	Kingsford Junction.
Mcfvor Bros.	Division St., Cobourg.	Cobourg.
McMahon, Robert.	R.R. No. 2, Kerwood.	Strathroy.
MacKay Bros.	R.R. No. 1, Dutton.	Dutton.
Martin, Thos. E.	Thamesville.	Thamesville.
Merkleys, Ltd.	9 Fraser Bldg., Ottawa.	Billings Bridge.
Middleton, C.	Wyoming.	Wyoming.
Midland and Penetanguishene Brick Works.	Box 143, Penetanguishene.	Penetanguishene.
Milton Pressed Brick Co., The.	Milton.	(Milton.
Miner, M. F.	Kingsville.	(Streetsville.
Missouri Tile Yard (W. H. Deller).	Thorndale, R.R. No. 4.	Kingsville.
Moscow Brick and Tile Works.	R.R. No. 1, Greenock.	Thorndale.
New, Edward.	133 George St., Hamilton.	Riverdale.
O'Dell, Wm. and Son.	R.R. No. 1, Ingersoll.	Hamilton.
Ollman Bros.	Macklin St., Box 241, Hamilton.	Ingersoll.
Ontario Denison Tile Co., Ltd.	24 Wyandotte St., Windsor.	Hamilton.
Ontario Paving Brick Co., Ltd.	353 Weston Rd., South, West Toronto.	(Tilbury.
O'Reilly, T. E.	320 Bay St., Ottawa.	(Fletcher.
Ottawa Brick Mfg. Co., Ltd., The.	53 Queen St., Ottawa.	S. Toronto.
Ott Brick & Tile Mfg. Co., Ltd., The.	35 King St. E., Kitchener.	Hog's Back.
Owen Sound Brick Co., Ltd., The.	359-2nd Ave. E., Owen Sound.	Hog's Back.
Parks, Henry W.	R.R. No. 2, Dresden.	Kitchener.
Paxton & Bray.	230 Queenston St., St. Catharines.	Owen Sound.
Pembroke Brick Co., The.	Pembroke.	Dresden.
Phillips, Thomas & Son.	R.R. No. 2, Lucknow.	St. Catharines.
Phinn Bros.	238 Briscoe St. London.	Pembroke.
Phippen & Field.	150 Dawes Rd., Toronto.	St. Helens.
Piggott, G. E., & Co.	20 Guestville Ave., Mt. Dennis.	London.
Port Credit Brick Co., Ltd., The.	Port Credit.	Toronto.
Port Rowan Brick & Tile Co.	Port Rowan.	Mount Dennis.
Price and Cumming.	Salisbury Ave., Humber Bay.	Port Credit.
Price and Smith.	458 Greenwood Ave., Toronto.	Port Rowan.
Provincial Brick Plant.	Parliament Bldg., Toronto.	Humber Bay.
Red Star Brick & Tile Yard (W.H. Barnhardt).	Stratford.	Toronto.
Reid, Jas.	R.R. No. 3, Belmont.	Mimico.
		Stratford.
		South Dorchester

## The Clay Products Industry—Brick and Tile—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Richardson, Jas. & Son.....	Kerrwood.....	Kerrwood.
Risclay Brick Co., Ltd.....	Main St. W., Hamilton.....	Hamilton.
Russell, Jos.....	40 Blake St., Toronto E.....	Toronto E.
Russell Shale Brick Ltd.....	100 Standard Bank Bldg., Ottawa.....	Russell.
Shale Products Ltd.....	Inglewood.....	Inglewood.
Smith, Alex. & Son.....	R. R. No. 2, Dutton.....	Dutton.
Snelgrove, A.....	Beaverton.....	Beaverton.
Sproat, Wm. M.....	R.R. No. 4, Seaforth.....	Seaforth.
Standard Brick Co., Ltd., The.....	363 Broadway Ave., Toronto.....	Toronto.
Steele, Edwin.....	Vankleek Hill.....	Vankleek Hill.
Stevens Bros. (Huntsville Brick Co.).....	Box 308, Huntsville.....	Huntsville.
Stratford Brick, Tile and Lumber Co.....	Mansion House, Stratford.....	Stratford.
Streetsville Brick Co., Ltd., The.....	410 Crown Office Bldg., Toronto.....	Streetsville.
Stroh, M. C.....	Conestogo.....	Conestogo.
Sun Brick Co., Ltd.....	32 Toronto St., Toronto.....	Todmorden.
Superior Brick and Tile Co., Ltd.....	426 Victoria Ave., Fort William.....	Slate River.
Sutherland, W. A.....	Box 293, Parkhill.....	Parkhill.
Tope, Richard, Estate.....	171 Queen St., S., Hamilton.....	Hamilton.
Toronto Brick Co., Ltd.....	60 Victoria St., Toronto.....	(Milton. Toronto.
Wagstaff, Charles.....	R. R. No. 4, Lindsay.....	Lindsay.
Wagstaff, A. H. & Co.....	348 Greenwood Ave., Toronto.....	Toronto.
Wallace R. & Son.....	Box 305, North Bay.....	North Bay.
Weiss, Aaron.....	Crediton.....	Crediton.
Wilson, S. & Sons.....	R. R. No. 2, Paisley.....	Lovet.
Winch Bros.....	Paisley.....	Paisley.
Windsor Brick & Tile Co.....	203 Exchange Bldg., Windsor.....	Near Kingsville.
Woodslee Brick & Tile Yards.....	South Woodslee.....	Woodslee.
Wright, Geo. & Sons.....	Comber.....	Comber.
<b>MANITOBA—</b>		
Alsip Brick, Tile & Lumber Co., Ltd.....	200 Tribune Bldg., Winnipeg.....	Winnipeg.
Marion, Joseph A.....	Box 30, St. Boniface.....	Plungert St., St. Boniface.
Sidney Brick & Clay Works, Ltd.....	Sidney.....	Sidney.
Snyder, A. & Company, Ltd.....	Box 1401, Portage la Prairie.....	Portage la Prairie.
Wardrop & Sons.....	Whitemouth.....	Whitemouth.
<b>SASKATCHEWAN—</b>		
Bruno Clay Works, Ltd.....	Bruno.....	Near Bruno.
Dominion Fire Brick and Clay Products, Ltd., The.....	421 Hammond Bldg, Moosejaw.....	Claybank.
Elliott, W. H. & Son.....	1320-3rd Ave. N., Saskatoon.....	Saskatoon.
Estevan Brick Co., Ltd., The.....	Estevan.....	Estevan.
Excelsior Brick Co., Ltd., The.....	Prince Albert.....	Prince Albert.
Meota Brick Co.....	Meota.....	Meota.
Saskatchewan Penitentiary.....	Prince Albert.....	Prince Albert.
<b>ALBERTA—</b>		
Acme Brick Co., Ltd., The.....	125 Alberta Block, Edmonton.....	Cannell.
Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Phillips Sq., Montreal. Que.....	Sandstone.
Clark Brick Co.....	10936-123rd St., Edmonton.....	Edmonton.
Collins, P.....	307-15th Ave., W. Calgary.....	Cochrane.
Gas City Brick Co., Ltd.....	Box 656, Medicine Hat.....	Medicine Hat.
Little, J. B. & Sons.....	Water St., Riverdale, Edmonton.....	Water St., Riverdale.
Redcliff Brick and Coal Co., Ltd.....	Box B 5, Redcliff.....	Redcliff.
Redcliff Pressed Brick Co., Ltd.....	Box 87, Redcliff.....	Redcliff.
Redcliff Premier Brick Co., Ltd.....	Box C 2, Redcliff.....	Redcliff.
<b>BRITISH COLUMBIA—</b>		
Armstrong Brick Works (C. & A. Oakland).....	Armstrong.....	Armstrong.
Christian Community of Universal Brotherhood, Ltd., The.....	Grand Forks.....	Grand Forks.
Clayburn Co., Ltd.....	850 Hastings St. W., Vancouver.....	(Clayburn. Kilgard.
Furnell and Delong.....	Gabriola Is.....	Gabriola Is.
Gorse and Jameson.....	Enderby.....	Enderby.
Humber Brick Co.....	740 Topaz Ave., Victoria.....	Victoria.
Johnston & Co., Ltd.....	Box 250, Kamloops.....	Near Kamloops.
Port Haney Brick Co., Ltd., The.....	846 Howe St., Vancouver.....	Port Haney.
Victoria Brick Co., Ltd.....	3001 Douglas St., Victoria.....	Victoria.

## The Clay Products Industry—Clay Sewer Pipe

<b>NOVA SCOTIA—</b>		
Standard Clay Products, Ltd.....	New Glasgow.....	New Glasgow.
<b>QUEBEC—</b>		
Standard Clay Products, Ltd.....	St. John's.....	St. John's.
<b>ONTARIO—</b>		
Dominion Sewer Pipe and Clay Industries, Ltd.....	Swansea.....	Swansea.
Hamilton and Toronto Sewer Pipe Co., Ltd., The.....	Wentworth St. N., Hamilton.....	Hamilton.
Ontario Sewer Pipe and Clay Products, Ltd.....	Mimico.....	Mimico.

## The Clay Products Industry—Firebrick, Fireclay and Fireclay Products

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Bras d'Or Coal Co., Ltd.	Little Bras d'Or	North Sydney.
Dominion Iron and Steel Co., Ltd.	Sydney	Sydney
Intercolonial Coal Mining Co., Ltd.	Westville	Westville.
<b>QUEBEC—</b>		
*Canada Firebrick Co., Ltd.	371 Aqueduct St., Montreal	Montreal.
Montreal Terra Cotta Co., Ltd.	511 St. Catharines St. West, Montreal	Lakeside.
*Standard Clay Products, Ltd.	P.O. Box 819, St. John's	St. John's.
<b>ONTARIO—</b>		
Algoma Steel Corporation Ltd.	Sault Ste. Marie	Sault Ste. Marie.
*Bailey, Geo., & Co.	321 Albany St., Toronto	Toronto
National Fire Proofing Co. of Canada, Ltd.	601 Dominion Bank Bldg., Toronto	Aldershot.
<b>ALBERTA—</b>		
Alberta Clay Products, Ltd.	Box 672, Medicine Hat	Medicine Hat.
<b>BRITISH COLUMBIA—</b>		
Clayburn Co., Ltd.	Credit Foncier Bldg., Vancouver	Clayburn.

## The Clay Products Industry—Stoneware and Pottery

<b>NEW BRUNSWICK—</b>		
Foley Pottery, Ltd.	St. John	St. John.
Mowat, G. Helen	St. Andrews	St. Andrews.
<b>QUEBEC—</b>		
*Canadian Potteries, Ltd.	2 Longueuil St., St. John's	St. John's.
*Canada Stoneware Works	Iberville	Iberville.
*Dominion Sanitary Pottery Co., Ltd.	189 St. James St., St. John's	St. John's.
<b>ONTARIO—</b>		
*Campbells Sons, R.	100 Locke St., S., Hamilton	Hamilton.
*Canadian General Electric Co.	212 King St. West, Toronto	Peterborough.
*Canadian Porcelain Co., Ltd.	Paradise Rd., Hamilton	Hamilton.
Davis, John and Sons	60 Heath St. W., Toronto	Toronto.
*Dominion Insulator and Manufacturing Co., Ltd.	Niagara Falls	Niagara Falls.
Foster Pottery Co.	Main St. W., Hamilton	Hamilton.
*Frontenac Floor and Wall Tile Co., Ltd.	Box 178 Kingston	Kingston.
<b>ALBERTA—</b>		
Canada Pottery, Ltd.	Medicine Hat	Medicine Hat.
Medalta Stoneware, Ltd.	Medicine Hat	Medicine Hat.

## The Lime Industry

<b>NOVA SCOTIA—</b>		
Eastern Lime Co. (H. C. Burchell)	Windsor	Windsor.
<b>NEW BRUNSWICK—</b>		
Peters, C. H. & Sons, Ltd.	Ward St., St. John	Torreyburn.
Provincial Lime Co., Ltd.	89 Water St., St. John	Brookville.
Purdy and Green	323 Main St., St. John	St. John.
Randolph and Baker, Ltd.	Randolph	Randolph.
Stetson, Cutler & Co., Ltd.	Campbellton	Indiantown, St. John.
<b>QUEBEC—</b>		
Armand and Beaudry	Joliette	Joliette.
Boivin, Arthur	Pont Rouge	Pont Rouge.
Dominion Lime Co., The	Box 149, Sherbrooke	Lime Ridge.
Heon, Octave	St. Louis de Champlain	St. Louis de Champlain.
Laurentian Stone Co., Ltd.	250 Catherine St., Ottawa, Ont.	Hull.
Limoges and Co.	40 rue Poupart, Montreal	Montreal.
Montreal Lime Co.	31 Prenouveau St., Montreal	Montreal.
St. Maurice Lime Co., Ltd.	Three Rivers	St. Louis de France.
Standard Lime Co., Ltd.	Joliette	(St. Marc des Carrieres. St. Paul de Joliette.
Stinson-Reeb Builders Supply Co., Ltd.	230 Dorchester St. W., Montreal	Montreal.
<b>ONTARIO—</b>		
Alabastine Co., Ltd., The	Paris	(Elora. Teeswater.
American Cyanamid Co.	511-5th Ave., New York City	Niagara Falls.
Beachville White Lime Co., Ltd.	Beachville	Beachville.
Brunner-Mond (Canada), Ltd.	Canadian Bank of Commerce Bldg., Toronto	Anderdon Township.
Cameron, W. M.	Carleton Place	Carleton Place.
Canada Lime Co., Ltd.	26 Queen St. E., Toronto	Coboconk.
Chalmers Lime Works	689 Seventh St. West, Owen Sound	Owen Sound.
Christie Henderson & Co., Ltd.	201 Crown Office Bldg., Toronto	(Hespler. Kelso. Puslinch.

\*Imported clays only.

## The Lime Industry—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Dominion Sugar Co., Ltd.	Chatham	Chatham. Wallaceburg.
Gallagher Lime and Stone Co., Ltd.	James Street, Hamilton	Hamilton.
Harvey, E., Ltd.	12 Douglas St., Guelph	Rockwood.
Jamieson Lime Co.	Hall St., Renfrew	Renfrew.
Marshall, James	Hamilton	Hamilton
Robertson Co., Ltd., D.	26 Queen St. East, Toronto	Milton.
Standard White Lime Co., Ltd.	15 Douglas St., Guelph	Beachville. Guelph.
Standard Chemical Co., Ltd.	524 St. Ambrose St., Montreal, Que	Eganville.
Toronto Brick Co., Ltd.	60 Victoria St., Toronto	Coboconk
Toronto Lime Co., Ltd.	26 Queen St. E., Toronto	Limehouse.
Vogan, Samuel	Gould St., Wiarton	Warton.
Wepler, Henry	R.R. No 2, Pricerville	Glenelg Tp.
<b>MANITOBA—</b>		
Moosehorn Lime Co., Ltd., The	214 Avenue Bldg., Winnipeg	Moosehorn.
Winnipeg Supply and Fuel Co., Ltd.	214 Avenue Bldg., Winnipeg	Stonewall.
<b>ALBERTA—</b>		
Loder Lime Co., Ltd.	Kananaskis	Kananaskis.
Summit Lime Works	803-6th Avenue S., Lethbridge	1½ miles east of Crow's Nest.
<b>BRITISH COLUMBIA—</b>		
Hedley Gold Mining Co., Ltd.	Hedley	Hedley.
Pacific Lime Co., Ltd.	602 Pacific Bldg., Vancouver	Blubber Bay, Texada Island.
Rosebank Lime Co.	602 Pacific Bldg., Vancouver	Esquimalt Harbour.

## The Stone Quarrying Industry—Granite

<b>NOVA SCOTIA—</b>		
Fairview Crushed Stone Co., Ltd.	334 Roy Bldg., Halifax	Fairview.
Hoyt, C. M.	Middleton	Nictaux W.
Queensport Granite Co., Ltd.	Queensport	Queensport.
Rice, Elmer	Lawrencetown	Nictaux W.
Rice, W. D.	Nictaux W.	"
<b>NEW BRUNSWICK—</b>		
Granite Street Pavement and Construction Co., Ltd.	Evandale	Hampstead.
McGrattan, and Sons Ltd.	St. George	St. George.
Meating, Epps, Company, Ltd.	St. George	"
Milne, Coutts & Co., Ltd.	St. George	"
Mooney, B. and Sons, Ltd.	112 Queens St., St. John	Queens County.
O'Brien and Baldwin	St. George	St. George.
Public Works, Department of	City Hall, St. John	St. John.
<b>QUEBEC—</b>		
B. and R. Granite Quarry	Beebe	Stanstead Tp.
Bernier, Aug.	Roberval	Roberval.
Brodie's Limited	1070 Bleury St., Montreal	Guenette.
Brunet, Joseph	663 Cote des Neiges Rd., Montreal	Mt. Johnson.
Cloutier, Jos.	Beebe	Graniteville.
Dumas, Art. & Cie Enr.	Riviere à Pierre	Chatham Tp.
Duncan, Wm.	R. R. I, Beebe	Beebe.
La Carrière Buisserie, Limitée	St. Sebastian	Riviere à Pierre.
Lacasse, J. C.	Beebe	Beebe.
McIntosh, Robert	R. R. I, Beebe	Beebe.
Mountain Granite Co.	Beebe	Beebe.
Norton, S. B.	Beebe	Beebe.
Paquet, Adolphe	St. David de Lévis	Beebe.
Stantead Granite Quarries Co., Ltd.	Beebe	St. David de Lévis.
Vachon, Rodrigue and Frère	St. Samuel Station	Graniteville.
Voyer, F., and Frère	Riviere à Pierre	St. Samuel de Gayhurst.
Westmount Construction Co. Ltd.	28 Royal Ave., N.D.G., Montreal	Riviere à Pierre.
<b>ONTARIO—</b>		
Abrams, J. M.	Gananoque	Chatham, Tp.
Bruce Mines Trap Rock Co., Ltd.	Sault Ste. Marie, Mich.	Gananoque.
Brown, A. C., Granite Co. Ltd.	Lyndhurst	Bruce Mines.
Campbell and Lattimore	146 King St. West., Toronto	Leeds Tp.
Corporation of City of Fort William	City Hall, Fort William	Findley.
Gordon, D. J., Granite Co.	18 Toronto St., Toronto	Fort William.
Horne, Wm.	377 Balmoral St., Winnipeg, Man.	Gananoque.
Mond Nickel Co., Ltd.	Coniston	Butler.
Ontario Rock Co., Ltd.	410 Crown Office Bldg., Toronto	Drury and Lavack Tps.
Reece-Hall, R.	Parry Sound	Belmont Tp.
Streets and O'Brien	47 Yonge St., Toronto	McDougall Tp.
<b>BRITISH COLUMBIA—</b>		
B.C. Monumental Works, Ltd.	2250 Main St., Vancouver	Gananoque.
Campbell & Ritchie Mon. Co.	507 Front St., Nelson	Granite Island.
Canadian Pacific Railway Company	Montreal, Que.	Nelson.
Coast Quarries, Limited	837 Hasting St., Vancouver	Mountain Sub-division.
Gilley Brothers, Ltd.	902 Columbia St. W., New Westminster	Granite Falls.
Nelson, City of	Box 1028, Nelson	Coquitlam Municipality.
Vancouver Granite Co., Ltd.	815 Bower Bldg., Vancouver	Nelson.
Vernon Granite and Marble Company	Box 285, Vernon	Nelson Island
		Yale Dist.

## The Stone Quarrying Industry—Limestone

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.	Sydney	Pt. Edward, C. B.
Eastern Lime Co. (H. C. Burchell)	Windsor	Windsor.
Nairn, John S.	24 Whitney Ave., Sydney	Scotch Lake.
Porter, James R.	Stellarton	Stellarton.
<b>NEW BRUNSWICK—</b>		
Peters, C. H., Sons, Ltd.	Ward St., St. John	Torreyburn.
Provincial Lime Co., Ltd.	89 Water St., St. John	Brookville.
Stetson, Cutler and Co., Ltd.	Campbellton	St. John.
<b>QUEBEC—</b>		
Baillargeon, P.	St. Jean	St. Jean.
Bathurst Co. Ltd.	Bathurst, N.B.	Port Daniel.
Beaudry, Joseph P.	Tache St., Joliette	Joliette.
Bousquet, Moise	Terre Haute	Terre Haute.
Canada Carbide Co., Ltd.	Power Bldg., Craig St. W., Montreal	Bedford.
Canada Cement Company	Phillips Square, Montreal	Hull.
Cité de Salaberry de Valleyfield	Valleyfield	Cité de Salaberry de Valleyfield.
Cousineau, Alderic	2455 St. Urbain St., Montreal	Montreal.
Deguire Quarry Company	Suite 2, 207 St. James St., Montreal	St. Laurent.
DeLorimier Quarry Company	1852 Iberville St., Montreal	Montreal.
Deschambault Quarry Corporation	52 rue St. Paul, Quebec	St. Marc (Portneuf).
Dussault, Art.	St. Marc des Carrières	St. Marc des Carrières.
Filion, Adélar	Lachute	Lachute.
Gagnon, Martin	3462 St. Andre St., Montréal	Montreal.
Gaspesian Fertilizer Co. Reg.	Port Daniel East	Port Daniel East.
Gauthier, Olivier	St. Marc des Carrières	St. Marc des Carrières.
Gingras Frères Ltd.	St. Marc des Carrières	St. Marc des Carrières.
Gravel, Ed. L.	Chateau Richer	Chateau Richer.
Institution des Souds-Muets	3600 rue St. Laurent, Montreal	St. Laurent.
Kennedy Const. Co., Ltd.	137 McGill St., Montreal	Terrebonne.
Lapointe, Jos.	74 Monté St. Laurent, Cartierville	Cartierville.
Lapointe, Hector	St. Dominique	St. Dominique.
Laurentian Stone Co., Ltd.	250 Catherine S., Ottawa, Ont.	Hull.
Laval Quarry Co., Ltd.	Cap St. Martin	Cap St. Martin.
Leclercq, Victor	3295 de Gaspé St., Montreal	Cap St. Martin.
Mahoney and Rich.	88 Bank St., Ottawa, Ont.	Merivale Rd.
Maissoneuve Quarry Co., Ltd.	4415 Rosemont Blvd., Montreal	Montreal.
Martineau, O., & Son, Ltd.	371 Marie Anne Est., Montreal	St. Marc (Portneuf).
Montreal Crushed Stone Co., Ltd.	590 Union Ave., Montreal	St. Vincent de Paul.
O'Connor Bros.	Huntingdon	Huntingdon.
Paquette, Damien	Village Bélanger	Cap St. Martin.
Quebec Quarry, Ltd.	319 St. Paul St., Quebec	Beaumont.
Quinlan Cut Stone, Ltd.	4414 St. Catherine St., Westmount	Montreal.
Roberge Quarry, Ltd.	Beaumont	Chateau Richer.
Rogers Quarry Co.	1701 Iberville St., Montreal	Montreal.
St. Laurent Quarry, Limited	Cap St. Martin	Cap St. Martin.
St. Vincent de Paul Penitentiary	St. Vincent de Paul	St. Vincent de Paul.
Simard, Alfred	Chambly Basin	St. Joseph Chambly.
Stone and Quarry Ltd.	800 Bellechasse St., Montreal	Montreal.
Tremblay, Nap.	Joffre Ave., Hull	Hull.
Verreault, Elzear	191 rue du Pont, Quebec	Gifford.
Vezina, Joseph	Bergerville	St. Foye.
Villaray, Quarry Co., Ltd., The	848 du Rosaire St., Montreal	Montreal.
Wallace Sandstone Quarries, Ltd.	120 St. James St., Montreal	Phillipsburg.
White Grit Co.	171 Waller St., Ottawa, Ont.	Portage du Fort.
<b>ONTARIO—</b>		
Barton Tp. Quarry	Courthouse, Hamilton	Barton Tp.
Beachville White Lime Co., Ltd.	Beachville	North Oxford.
Belton, Peter	43 Glen Ridge Ave., St. Catharines	Grantham.
Beverly Tp. Quarry	Rockton	Beverly Tp.
Bourgie, J. B.	Embrun	Embrun.
Brulé, A. A.	Billings Bridge	Billings Bridge.
Brunner Mond Canada Ltd.	Canadian Bank of Commerce Bldg., Toronto	Anderdon Tp.
Canada Crushed Stone Corporation, Ltd.	Dundas	West Flamboro Tp.
Carleton, County of	71½ Sparks St., Ottawa	Osgoode-Gloucester-Nepean.
Cloutier & Grenon	Casselman	St. Isidore de Prescott.
Cook & Son, J. S.	Warton	Amabel Tp.
Crushed Stone, Ltd.	Kirkfield	Kirkfield.
Farmer, Geo. & Sons	45 Bertrand Ave., Ottawa	Osgoode Tp.
Farr, L. G. Mrs.	Haileybury	Haileybury.
Foster, R. R.	273 Echo Drive, Ottawa	City View.
Galt, Corporation of	Galt	Galt.
Gow, James	Fergus	Fergus.
Gowville Crushed Rock Co., Ltd.	Merrickville	Oxford Tp.
Hagersville Contracting Co., Ltd.	Hagersville	Walpole Tp.
Hagersville Crushed Stone Co.	Hagersville	Oneida Tp.
Hagersville Quarries, Ltd.	4 Flora St., St. Thomas	Walpole Tp.
Halliday, Fred	Quarries P.O., Ottawa	Gloucester Tp.
Humberstone Tp. Quarry	Humberstone	Humberstone Tp.
Hydro Electric Power Commission of Ontario	190 University Ave., Toronto	Niagara and Stamford Tps.
Innerkip Stone Quarry	Innerkip	Innerkip.
Keeling, James	1179-16th St. E., Owen Sound	Owen Sound.

## The Stone Quarrying Industry—Limestone—Continued

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Kingston Penitentiary.....	Portsmouth.....	Portsmouth.
Kirby, T. Sidney Co., Ltd.....	213 Sussex St., Ottawa.....	Gloucester Tp.
Lally, M., Estate of.....	Smithville.....	Smithville.
Law Construction Co., Ltd., The.....	50 Yonge St., Arcade, Toronto.....	Windmill Point.
Longford Quarry Co., Ltd.....	6 Peter St., Orillia.....	Rama Tp.
Markus, Wm., Ltd.....	Pembroke.....	Pembroke Tp.
McDonnell and Dibblee.....	416 St. James St., Montreal, Que.....	Bell's Corners.
McKay, Alex., Company, Ltd.....	2 Brown's Ave., Toronto.....	Owen Sound.
Oliver Rogers Stone Co., Ltd.....	841 Fourth Ave. E., Owen Sound.....	Owen Sound.
Ontario Reformatory Industries.....	Parliament Bldgs., Toronto.....	Guelph Tp.
Ontario Stone Corporation, Ltd.....	611 Excelsior Life Bldg., Toronto.....	North Orillia.
Pt. Anne Quarries, Ltd.....	Ft. of Jarvis St., Toronto.....	Point Anne.
Public Highways, Dept. of.....	Toronto.....	
Queenston Quarries Ltd.....	St. Davids.....	St. Davids.
Redden, Henry.....	Box 328, Campbellford.....	Campbellford.
Robillard, H. & Son.....	195 Nicholas St., Ottawa.....	Gloucester Tp.
Roddy & Monk.....	293 Division St., Kingston.....	Kingston.
Standard White Lime Co., Ltd.....	15 Douglas St., Guelph.....	Beachville.
Stormont, Dundas and Glengarry, Counties of.....	Court House, Cornwall.....	Finch Tp.
Thames Quarry Co., Ltd., The.....	St. Mary's.....	St. Mary's.
Walker Bros.....	Thorold.....	Stamford Tp.
Wattam, Geo. H.....	Shelburne.....	Amaranth Tp.
Wehman, John.....	251 Division St., Kingston.....	Kingston.
Welland County Quarry.....	Court House, Welland.....	Humberstone Tp.
Wentworth, County of.....	Court House, Hamilton.....	Waterdown.
Woodhouse Crushed Stone Co., Ltd.....	Port Dover.....	Woodhouse Tp.
Wentworth Quarries, Ltd.....	Vinemount.....	Saltfleet Tp.
<b>MANITOTA—</b>		
Gillis Quarries, Ltd.....	Spruce and Richard Sts., Winnipeg.....	Garson.
Tyndall Quarry Co., Ltd.....	1591 Erin St., Winnipeg.....	Winnipeg.
Winnipeg, City of.....	Winnipeg.....	Stony Mountain.
<b>ALBERTA—</b>		
Smaniotto, L.....	Seebe.....	Seebe.
Summit Lime Works.....	Lethbridge.....	Lethbridge.
<b>BRITISH COLUMBIA—</b>		
Cons. Mining and Smelting Co. of Canada, Ltd.....	Trail.....	Fife.
Powell River Co., Ltd.....	Powell River.....	Texada Island.

## The Stone Quarrying Industry—Marble

<b>QUEBEC—</b>		
Marbre National Lté.....	L'Annonciation.....	L'Annonciation
Wallace Sandstone Quarry, Ltd.....	120 St. James St., Montreal.....	Philipsburg, Missisquoi County.

## The Stone Quarrying Industry—Sandstone

<b>NOVA SCOTIA—</b>		
Wallace Sandstone Quarries, Ltd.....	120 St. James St., Montreal.....	Wallace.
<b>QUEBEC—</b>		
Blais, Jos., Engr.....	8 Mont Marie Ave., Levis.....	Levis Co.
Gagnon, L. Philippe.....	St. David.....	Levis Co.
Kennedy Construction Co. Ltd.....	137 McGill St., Montreal.....	Melocheville.
Kirby, T. Sydney, Co. Ltd.....	213 Sussex St., Ottawa.....	St. Simon, Two Mountain Co.
Paquet, Adolphe.....	St. David.....	Levis Co.
Quebec Harbour Commission.....	Pointe-à-Carcy, Quebec.....	Victoria Cove, Quebec.
Rousseau, T. E., and Co. Ltd.....	48 Second Ave., Quebec.....	St. Antoine of Tilly.
Sherbrooke, The City of.....	Sherbrooke.....	Sherbrooke Co.
Silico Ltd.....	102 St. Francois-Xavier St., Montreal.....	St. Canut.
Vezina, Jos. Engr.....	St. Louis Road, St. Foye.....	Quebec Co.
<b>ONTARIO—</b>		
Robertson, D. and Co. Ltd.....	26 Queen St. E., Toronto.....	Milton.
Rogers, F. & Co.....	1193 Queen St. W., Toronto.....	Glen Williams.
<b>ALBERTA—</b>		
Oliver, Wm.....	1823-16th St. W., Calgary.....	Terra Cotta.
<b>BRITISH COLUMBIA—</b>		
McDonald, J. A. & C. H.....	1571 Main St., Vancouver.....	Haddington Island.
		Newcastle Island.

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**Manufactures of Non-Ferrous Metals:** Aluminium Ware—Brass and Copper Products—Lead, Tin and Zinc Products—Manufactures of the Precious Metals—Electrical Apparatus and Supplies—Miscellaneous Non-Ferrous Metal Products.

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Report on the Consumption of Prepared Non-Metallic Minerals in Canada.

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**Annual Report on the Mineral Production of Canada.** (In one volume).

PART ONE—PRODUCTION STATISTICS—General Statistical Review of the Mineral Production of Canada.

*Metals.*—Aluminium—Antimony—Arsenic—Chromite—Cobalt—Copper—Gold—Iron Ore—Iron, Pig—Lead—Mercury—Molybdenum—Nickel—Platinum and Palladium—Silver—Tin—Zinc.

*Non-Metals.*—Abrasives—Actinolite—Asbestos—Barytes—Bituminous Sands—Coal—Coke—Feldspar—Fluorspar—Graphite—Gypsum—Iron Oxides—Magnesite—Magnesium Sulphate—Mica—Mineral Waters—Natro-Alunite—Natural Gas—Peat—Petroleum—Phosphate—Pyrites—Quartz—Salt—Sodium Carbonate—Sodium Sulphate—Talc and Soapstone.

*Structural Materials and Clay Products.*—Cement—Clay and Clay Products—Lime—Sand and Gravel—Sand-Lime Brick—Slate—Stone.

PART TWO—GENERAL STATISTICS.—Text and tables presenting general reviews of the mineral industry in Canada (a) by provinces; (b) by industries.

PART THREE—DIRECTORY.—List showing the names, head office and mine or plant address of all concerns operating in the mineral industry in Canada, arranged in alphabetical order by industrial groups.

#### Coal—

#### Monthly Report on Coal and Coke Statistics for Canada.

General review for the month with tables showing comparative data for the month and year to date, output by coal-mining districts and by provinces, imports and exports by ports and by kinds of coal. In this report there is also a section showing statistics on production, imports and exports of coke for the month and year to date by provinces.

#### Annual Report on Coal Statistics for Canada.

Text and tables showing, for Canada, and for each of the coal-producing provinces, historical and current data on output, tonnage lost, disposition of coal from the mines domestic and foreign shipments, exports and imports by ports, consumption of coal, prices, employment, salaries and wages paid, power equipment, capital investment, etc.

#### Bulletins—

##### (a) PRODUCTION—

*Metals.*—Arsenic—Cobalt—Copper—Gold—Iron Ore—Lead—Nickel—Meta's of the Platinum Group—Silver—Zinc—Miscellaneous Non-Ferrous Metals including Aluminium, Antimony, Chromite, Manganese, Mercury, Molybdenum, Tin, Tungsten.

*Non-Metals.*—Abrasives—Asbestos—Coal—Feldspar—Gypsum—Iron Oxides—Mica—Natural Gas—Petroleum—Quartz—Salt—Talc and Soapstone—Miscellaneous Non-Metallic Minerals including Actinolite, Barytes, Fluorspar, Graphite, Magnesite, Magnesium Sulphate, Mineral Waters, Natro-Alunite, Peat, Phosphate, Pyrites, Sodium Carbonate, Sodium Sulphate.

*Structural Materials.*—Cement—Clay and Clay Products—Lime—Sand and Gravel—Stone and Slate.

##### (b) ANNUAL INDUSTRIAL REVIEWS—

The Gold Industry—Copper-Gold-Silver Industry—Nickel-Copper Industry—Silver-Cobalt Industry—Silver-Lead-Zinc Industry.

##### (c) ANNUAL PROVINCIAL REVIEWS OF THE MINERAL INDUSTRY—

Nova Scotia—New Brunswick—Quebec—Ontario—Manitoba—Saskatchewan—Alberta—British Columbia—Yukon.

CANADA—DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH

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ANNUAL REPORT

ON THE

MINERAL PRODUCTION OF  
CANADA

DURING THE CALENDAR YEAR

1925

Published by Authority of the Hon. James Malcolm, M.P.,  
Minister of Trade and Commerce



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1927

## NOTES ON STATISTICS OF PRODUCTION

In the collection of production data, the Dominion Bureau of Statistics makes a division between primary and secondary production. In the first-named class, there are separate sections for the collection of statistics on (a) **Agricultural Products**, (b) **Furs**, (c) **Fish**, (d) **Forest Products**, (e) **Mineral Products**.

In the second are included (a) **Manufacturing** and (b) **Construction**.

**Manufacturing** is subdivided into nine groups of industries, producing concerns being classified according to the principal component material of their major products. For example, manufactures of leather goods are classified under "Animal Products"; the pulp and paper industry under "Wood and Paper," etc. An outline of the scheme of classification in use for manufacturing industries is given below:

### *Manufactures of*

- (1) **Vegetable Products**, including—Coffee and Spices; Cocoa and Chocolate; Preserved and Canned Products; Pickles, Vinegar and Cider; Flour and Cereals; Bread and other Bakery Products; Macaroni and Vermicelli; Distilled and Brewed Liquors and Wines; Rubber Products; Starch and Glucose; Sugar; Tobacco Products; Linseed Oil and Oil Cake.
- (2) **Animal Products**, including—Fish and Fish Products; Dairy Factory Products; Meat and Meat Products; Leather and Leather Products; Furs and Fur Products.
- (3) **Textiles and Textile Products**, including—Cotton Textiles (Cloth, Yarn, Thread and Waste); Woollen Textiles (Cloth, Yarn, Blankets, Felt and Waste); Silk Products; Factory-Made Clothing; Carpets, Rugs and Mats; Cordage, Rope and Twine.
- (4) **Wood and Paper**, including—Pulp and Paper Mill Products; Paper Goods; Printing, Publishing and Lithographing; Saw and Planing Mill Products; Furniture; Carriages, Wagons and Sleighs; Wooden Containers; Woodenware; Turned Wood Products; and the Output of Similar Wood-Using Industries.
- (5) **Iron and Steel and their Products**, including—Pig Iron and Ferro-Alloys; Steel and Rolled Products; Castings and Forgings; Boilers, Tanks and Engines; Agricultural Implements; Machinery; Automobiles; Automobile Supplies; Bicycles; Railway Rolling Stock; Wire and Wire Goods; Sheet Metal Products; Hardware and Tools; Miscellaneous Iron and Steel Products.
- (6) **Manufactures of Non-Ferrous Metal Products**, including—Aluminium and Aluminium Ware; Brass and Copper Products; Lead, Tin and Zinc Products; Precious Metal Products; Electrical Apparatus and Supplies; Miscellaneous Non-Ferrous Metal Products.
- (7) **Manufactures of Non-Metallic Mineral Products**, including—Aerated Waters; Asbestos and Allied Products; Cement Products and Sand-Lime Brick; Coke and By-Products; Glass (blown, cut, ornamental, etc.); Illuminating and Fuel Gas; Products made from Imported Clay; Monumental and Ornamental Stone; Petroleum Products; Miscellaneous Manufactured Non-Metallic Mineral Products, including (a) Artificial Abrasives; (b) Abrasive Products; (c) Artificial Graphite and Electrodes; (d) Gypsum Products; (e) Mica Products; (f) Miscellaneous Non-Metallic Mineral Products, n.e.s.
- (8) **Chemicals and Allied Products**, including—Coal Tar and its Products; Acids, Alkalies, Salts and Compressed Gases; Explosives, Ammunition, Fireworks and Matches; Fertilizers; Medicinal and Pharmaceutical Preparations; Paints, Pigments and Varnishes; Soaps, Washing Compounds and Toilet Preparations; Inks, Dyes, and Colours; Wood Distillates and Extracts; Miscellaneous Chemical Products including (a) Adhesives, (b) Baking Powder, (c) Boiler Compounds, (d) Celluloid Products, (e) Flavouring Extracts, (f) Insecticides, (g) Polishes and Dressings, (h) Sweeping Compounds, (i) Chemical Products, n.e.s.
- (9) **Miscellaneous Products**, including—Brooms and Brushes; Electric Light and Power; Musical Instruments, etc.

The statistics of manufactures are also classified according to the **use** or **purpose** of the end product as follows:—

- (1) **Food**, including—Breadstuffs; Fish; Nuts; Fruits and Vegetables; Meats; Milk Products; Oils and Fats; Sugar; Infusions; Miscellaneous.
- (2) **Drink and Tobacco**, including—Beverages, alcoholic; Beverages, non-alcoholic; Tobacco.
- (3) **Clothing**, including—Boots and Shoes; Fur Goods; Garments and Personal Furnishings; Gloves and Mitts; Hats and Caps; Knitted Goods; Waterproofs; Miscellaneous.
- (4) **Personal Utilities**, including—Jewellery and Time-Pieces; Recreational Supplies; Personal Utilities, n.e.s.
- (5) **House Furnishings**.
- (6) **Books and Stationery**.
- (7) **Vehicles and Vessels**.
- (8) **Producers' Materials**, including—Farm Materials; Manufacturers' Materials; Building Materials; General Materials.
- (9) **Industrial Equipment**, including—Farming Equipment; Manufacturing Equipment; Trading Equipment; Service Equipment; Light, Heat and Power Equipment; General Equipment.
- (10) **Miscellaneous**.

## PREFACE

Annual statistical reports on the mineral production of Canada have been published for many years, first by the Geological Survey, later by the Mines Branch of the Department of Mines, and since 1921, by the Dominion Bureau of Statistics. The present report is issued in continuance of this series, certain new material having been introduced which it is believed will be found of value to the mineral industry.

The statistics relating to the different minerals and the general statistical tables have been prepared as formerly, and these have been supplemented by general reviews of the principal mineral industries, (e.g., the copper-gold industry, the silver-lead-zinc industry, the nickel-copper industry, etc.), and by a section on metallurgical works. In recent years, the value of statistics of this character, covering capital, labour, equipment, etc., has become more generally recognized and the demand for such information has greatly increased.

To meet a demand for the names and addresses of concerns operating in the mineral industry, a list has been prepared and is included in this report.

Statistical reports on the mineral production of Canada issued by the Dominion Bureau of Statistics include the following publications: (a) Preliminary estimate of production issued on January 1 of each year; (b) Preliminary Report for the calendar year, printed in February; (c) Report on production during the six months ending June 30, distributed in August; (d) Bulletins giving finally revised production data for the calendar year on each mineral product, issued as the compilations are completed; (e) Annual Report on the Mineral Production of Canada, available towards the close of the year. Monthly reports on Coal Statistics are also issued on the fifteenth of each month, and a special annual report giving detailed information on the Canadian coal mining industry and on the importation and distribution of coal, is published in June.

The cordial thanks of the Bureau are tendered to the Dominion Department of Mines and to the several Provincial Departments of Mines, which have without exception, assisted materially in the preparation of the report. In reference to the co-ordination of mining statistics between the Provincial Departments and this Bureau, it has been found possible to arrange for the co-operative collection of monthly statistics of coal production with all the provinces in which such records are obtained, namely, Nova Scotia, New Brunswick, Saskatchewan and Alberta. In the field of general mining statistics, co-operative arrangements with the Ontario Department of Mines have been continued, thus preventing overlapping and duplication of work. During the year similar arrangements with Quebec were completed, to the mutual advantage of provincial and federal departments. All data collected by the Bureau on mining statistics are made available to the Dominion Department of Mines.

The thanks of the Bureau are also tendered to the mine and smelter operators, for assistance given and information made available. The railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data the receipt of which is gratefully acknowledged.

The report has been prepared under the direction of Mr. S. J. Cook, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch of the Bureau, by Mr. W. H. Losee, B.Sc., and by Mr. B. R. Hayden.

R. H. COATS,  
*Dominion Statistician.*

DOMINION BUREAU OF STATISTICS, OTTAWA,  
April 30, 1927.



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## PART ONE

### PRODUCTION STATISTICS

*The first section of this report deals with the statistics of the Mineral Production of Canada. Where possible, tables showing historical data, and World's Production have been shown.*

Table 1.—Quantities and Values of Mineral Products from Canadian Sources, 1924 and 1925

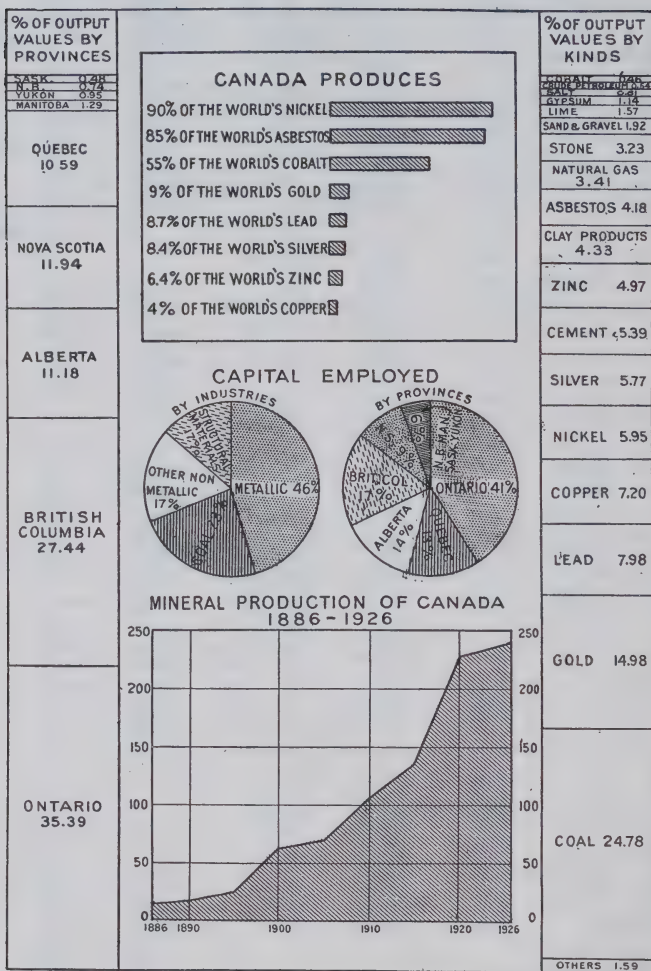
			1924			1925		
			Quantity	Value	Per cent of total	Quantity	Value	Per cent of total
METALLIC				\$			\$	
Antimony.....	Lb.					1,751	206	—
Arsenic (As <sub>2</sub> O <sub>3</sub> ).....			4,621,567	348,293	0.16	3,434,137	130,302	0.05
Bismuth.....			12,863	27,913	0.01	19,667	18,566	—
Cobalt, metallic and contained in oxide	"		948,704	1,682,395	0.80	1,116,492	2,328,517	1.03
Copper.....			104,457,447	13,604,538	6.50	111,450,518	15,649,882	6.90
Gold.....	Fine oz.		1,525,382	31,532,443	15.05	1,735,735	35,880,826	15.85
Iron pig, from Canadian ore.....	Tons		3,710	92,750	0.04	3,978	11,934	—
Iron ore sold for export.....			1,408	3,771	—	3,978	11,934	—
Lead.....	Lb.		175,485,499	14,221,345	6.79	253,590,578	23,127,460	10.20
Manganese ore.....	Tons		584	4,080	—	—	—	—
Molybdenite.....	Lb.		18,739	9,370	—	22,350	11,176	—
Nickel (x).....			69,536,350	19,470,173	9.29	73,857,114	15,946,672	7.05
Palladium.....	Fine oz.		8,923	811,993	0.39	8,288	648,969	0.28
Platinum.....			9,186	1,091,427	0.52	8,698	1,028,192	0.46
Rhodium, Osmium, Iridium.....			593	51,120	0.02	—	—	—
Silver.....			19,736,323	13,180,113	6.29	20,228,988	13,971,150	6.16
Zinc.....	Lb.		98,909,077	6,274,791	3.00	109,268,511	8,328,446	3.69
<b>Total.....</b>				<b>102,406,528</b>	<b>48.86</b>		<b>117,082,298</b>	<b>51.67</b>
NON-METALLIC								
Actinolite.....	Tons		90	1,225	—	40	500	—
Asbestos.....	"		225,744	6,710,830	3.20	290,389	8,988,360	3.96
Barytes.....	"		151	3,308	—	95	2,259	—
Bituminous sands.....	"		531	2,127	—	1,148	4,594	—
Coal.....			13,638,197	53,593,988	25.58	13,134,968	49,261,951	21.76
Feldspar.....	"		44,804	358,540	0.17	28,681	235,789	0.10
Fluorspar.....	"		76	1,843	—	3,886	19,234	—
Garnets.....	"		360	7,200	—	—	—	—
Graphite.....	"		1,334	76,117	0.04	2,569	158,763	0.07
Grinding pebbles.....	"		—	—	—	105	945	—
Grindstones.....	"		2,691	130,824	0.06	2,562	124,165	0.05
Gypsum.....	"		646,016	2,208,108	1.06	740,322	2,389,891	1.05
Magnesite.....	"		3,873	101,356	0.05	5,576	122,325	0.05
Mica.....	"		4,091	357,272	0.17	4,020	261,463	0.11
Mineral water.....	Imp. gal.		209,353	15,421	0.01	190,134	28,413	0.01
Natro-alunite.....	Tons		—	—	—	20	1,000	—
Natural gas.....	M cu. ft.		14,881,336	5,708,636	2.73	16,902,897	6,833,005	3.01
Oxides, iron.....	Tons		7,266	91,160	0.04	7,118	91,913	0.04
Peat.....	"		—	—	—	1,370	8,394	—
Petroleum, crude.....	Brl.		160,773	467,400	0.22	332,001	1,250,705	0.58
Phosphates.....	Tons		—	—	—	16	189	—
Pyrites.....	"		23,552	95,620	0.05	15,605	58,899	0.03
Quartz.....	"		150,896	323,156	0.15	197,224	363,612	0.16
Salt.....	"		207,979	1,374,780	0.66	233,746	1,410,697	0.64
Sodium carbonate.....	"		510	5,173	—	1,120	8,140	—
Sodium sulphate.....	"		1,083	6,004	—	3,876	19,380	—
Tale and soapstone.....	"		11,332	154,480	0.07	14,474	205,835	0.09
Tripolite.....	"		33	838	—	—	—	—
Volcanic ash.....	"		245	1,103	—	160	1,380	—
<b>Total.....</b>				<b>71,796,009</b>	<b>34.26</b>		<b>71,851,801</b>	<b>31.71</b>
STRUCTURAL MATERIALS AND CLAY PRODUCTS								
Cement, portland.....	Brl.		7,498,624	13,398,411	6.39	8,116,597	14,046,704	6.20
Clay products—								
Brick—Soft mud process	Face..... M		10,831	185,248	0.09	27,701	521,739	0.23
	Common.....	"	50,079	746,044	0.36	51,214	753,970	0.33
Stiff mud process	Face.....	"	80,565	1,842,224	0.88	93,903	1,883,856	0.83
(wire cut)	Common.....	"	124,556	1,880,631	0.90	116,105	1,635,257	0.73
Dry press	Face.....	"	35,203	761,572	0.36	37,201	800,504	0.35
	Common.....	"	12,794	168,043	0.08	22,053	270,135	0.12
Fancy or ornamental brick.....	"		755	98,460	0.05	524	26,320	0.01
Sewer brick.....	"		2,690	40,775	0.02	2,485	52,382	0.02
Fire brick from domestic clay	"		4,327	209,256	0.10	6,197	305,332	0.13
Fireclay.....	Tons		3,645	26,258	0.01	623	6,544	—
Fireclay blocks and shapes.....	"		—	51,273	0.02	—	36,567	0.02
Structural tile—Hollow blocks (including fire-proofing and load-bearing tile).....	"		96,818	926,777	0.44	115,576	1,063,397	0.49
Roofing tile.....	No.		7,377	917	—	78,479	6,323	—
Floor tile (quarries).....	Sq. ft.		444,601	35,608	0.02	140,927	28,338	0.02
Draia tile.....	M		15,137	409,369	0.20	14,552	401,503	0.18
Sewer pipe (including copings, flue lining, etc.).....	Tons		76,355	1,594,280	0.76	73,791	1,440,269	0.64
Pottery, glazed or unglazed.....	Bush.		9,136,952	3,178,541	1.51	10,256,542	3,387,652	1.49
Sand and gravel.....	Tons		11,603,500	3,181,083	1.52	11,018,647	3,220,410	1.42
Stone—								
Granite.....	"		419,971	1,013,345	0.47	971,718	2,014,535	0.89
Limestone.....	"		4,249,061	4,831,684	2.35	4,643,853	5,049,563	2.22
Marble.....	"		4,379	322,455	0.14	3,046	254,922	0.12
Sandstone.....	"		94,603	240,273	0.10	87,502	145,757	0.06
<b>Total.....</b>				<b>35,380,869</b>	<b>16.88</b>		<b>37,649,234</b>	<b>16.62</b>
<b>Grand total.....</b>				<b>209,583,406</b>	<b>100.00</b>		<b>226,583,333</b>	<b>100.00</b>

x See text on nickel page 61.

Table 2.—Increase or Decrease in Quantities and Values of Mineral Products from Canadian Sources, in 1925 as compared with 1924

		Increase (+) or Decrease (—)		Increase (+) or Decrease (—)	
		Quantity	%	Value	%
<b>METALLIC</b>					
Antimony.....	Lb.	+ 1,751	—	+ 206	—
Arsenic.....	"	+ 1,187,430	+ 25.6	+ 217,991	+ 62.5
Bismuth.....	"	+ 6,804	+ 52.8	+ 9,347	+ 33.5
Cobalt, metallic and contained in oxide.....	Lb.	+ 167,788	+ 17.6	+ 646,122	+ 38.4
Copper.....	"	+ 6,993,071	+ 6.6	+ 2,045,344	+ 15.0
Gold.....	Fine oz.	+ 210,353	+ 13.7	+ 4,348,383	+ 13.7
Iron pig from Canadian ore.....	Tons	+ 3,710	—	+ 92,750	—
Iron ore sold for export.....	"	+ 2,570	+ 182.5	+ 8,163	+ 216.4
Lead.....	Lb.	+ 78,105,079	+ 44.5	+ 8,906,115	+ 62.6
Manganese.....	Tons	+ 584	—	+ 4,088	—
Molybdenite.....	Lb.	+ 3,611	+ 19.2	+ 1,806	+ 19.2
Nickel.....	"	+ 4,320,764	+ 6.2	+ 3,523,506	+ 18.0
Palladium.....	Fine oz.	+ 1,228	+ 12.9	+ 214,144	+ 24.8
Platinum.....	"	+ 488	+ 5.3	+ 63,235	+ 6.7
Silver.....	"	+ 492,665	+ 2.4	+ 791,037	+ 6.0
Zinc.....	Lb.	+ 10,359,434	+ 10.4	+ 2,053,655	+ 32.7
<b>Total.....</b>				<b>+14,675,770</b>	<b>+ 14.3</b>
<b>NON-METALLIC</b>					
Actinolite.....	Tons	+ 50	+ 55.5	+ 725	+ 59.1
Asbestos.....	"	+ 64,645	+ 28.6	+ 2,277,530	+ 33.9
Barytes.....	"	+ 56	+ 37.0	+ 1,049	+ 31.7
Bituminous sands.....	"	+ 617	+ 116.1	+ 2,467	+ 115.9
Coal.....	"	+ 503,229	+ 3.6	+ 4,332,029	+ 8.0
Feldspar.....	"	+ 16,123	+ 35.9	+ 122,751	+ 34.2
Fluorspar.....	"	+ 3,810	—	+ 17,891	—
Garnets (wire cut).....	"	+ 360	—	+ 7,200	—
Graphite.....	"	+ 1,235	+ 92.5	+ 82,646	+ 108.5
Grinding pebbles.....	"	+ 105	—	+ 945	—
Grindstones.....	"	+ 129	+ 4.7	+ 6,659	+ 5.0
Gypsum.....	"	+ 94,307	+ 14.5	+ 181,783	+ 8.2
Magnesite.....	"	+ 1,703	+ 43.9	+ 20,969	+ 20.6
Mica.....	"	+ 71	+ 1.7	+ 95,809	+ 26.8
Mineral water.....	Imp. Gal.	+ 19,219	+ 9.1	+ 12,992	+ 84.2
Natro-alunite.....	Tons	+ 20	—	+ 1,000	—
Natural gas.....	M cu. ft.	+ 2,021,561	+ 13.5	+ 1,124,369	+ 19.6
Oxides, iron.....	Tons	+ 148	+ 2.0	+ 753	+ 0.8
Peat.....	"	+ 1,370	—	+ 8,394	—
Petroleum, crude.....	Brl.	+ 171,228	+ 106.5	+ 783,305	+ 167.5
Phosphate.....	Tons	+ 16	—	+ 189	—
Pyrites.....	"	+ 7,947	+ 33.7	+ 36,721	+ 38.4
Quartz.....	"	+ 46,328	+ 30.7	+ 40,456	+ 12.5
Salt.....	"	+ 25,767	+ 12.3	+ 35,917	+ 2.6
Sodium carbonate.....	"	+ 610	+ 119.6	+ 2,967	+ 57.3
Sodium sulphate.....	"	+ 2,793	+ 257.8	+ 13,376	+ 222.7
Talc.....	"	+ 3,142	+ 27.7	+ 51,355	+ 33.2
Tripolite.....	"	+ 33	—	+ 838	—
Volcanic ash.....	"	+ 85	+ 34.6	+ 277	+ 25.1
<b>Total.....</b>				<b>+ 55,792</b>	<b>0.00</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>					
Cement.....	Brl.	+ 617,973	+ 8.2	+ 648,293	+ 4.8
Clay products—					
Brick—Soft mud process.....	M	+ 16,870	+ 155.7	+ 336,491	+ 181.6
Face.....	"	+ 1,135	+ 2.2	+ 7,926	+ 1.0
Common.....	"	+ 13,338	+ 16.5	+ 41,632	+ 2.2
Stiff mud process.....	"	+ 8,451	+ 6.7	+ 245,374	+ 13.0
Face.....	"	+ 1,993	+ 5.6	+ 38,932	+ 5.1
Common.....	"	+ 9,259	+ 72.3	+ 102,092	+ 60.7
Fancy or ornamental brick.....	"	+ 231	+ 30.5	+ 72,140	+ 73.2
Sewer brick.....	"	+ 205	+ 7.6	+ 11,607	+ 28.4
Fire brick from domestic clay.....	"	+ 1,870	+ 43.2	+ 96,076	+ 45.9
Fire clay.....	Tons	+ 3,022	+ 82.9	+ 19,714	+ 75.0
Fire clay blocks and shapes.....	"	—	—	+ 14,706	+ 28.6
Structural tile—Hollow blocks (including fire proofing and load-bearing tile).....	No.	+ 18,758	+ 19.3	+ 166,620	+ 17.9
Roofing tile.....	"	+ 71,102	+ 963.8	+ 5,406	+ 589.5
Floor tile (quarries).....	Sq. ft.	+ 303,674	+ 68.3	+ 7,270	+ 20.4
Drain tile.....	M	+ 585	+ 3.8	+ 7,866	+ 1.9
Sewer pipe (including copings, flue linings, etc.).....	Tons	+ 2,564	+ 3.3	+ 154,011	+ 9.6
Pottery, glazed or unglazed.....	"	—	—	+ 28,913	+ 12.1
Lime.....	Bush.	+ 1,119,590	+ 12.2	+ 209,111	+ 6.5
Sand and gravel.....	Tons	+ 584,853	+ 5.0	+ 39,327	+ 1.2
Stone.....	"	+ 938,105	+ 19.6	+ 1,057,020	+ 16.4
<b>Total.....</b>				<b>+ 2,268,365</b>	<b>+ 6.4</b>
<b>Grand total.....</b>				<b>+16,999,927</b>	<b>+ 8.1</b>

# MINERAL PRODUCTION OF CANADA



Drawn in M.R.I. Service Dept. of Ind.

# DOMINION BUREAU OF STATISTICS

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## ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA

DURING THE CALENDAR YEAR 1925

### GENERAL REVIEW

Great progress was made in Canada's mineral industry in 1925, when the total production of the mines, quarries, oil and gas wells, cement and clay products plants was valued at \$226,583,333. This was an increase of \$16,999,927 or 8.1 per cent over the total for 1924 and only 1.2 million dollars less than the record valuation of \$227,859,665 established in 1920, when the average range of metal prices was approximately 35 per cent higher than in 1925. Metallic mineral output was the greatest of any year on record, even exceeding the 1918 war year figure of 114.5 million dollars and was 14.3 per cent greater than in 1924. Non-metallic minerals did not experience the same rapid increase over the previous year but maintained about the same value of production even though coal output, the largest commodity in the non-metallic list, dropped 3.6 per cent in quantity and 8 per cent in value. This drop, however, was offset considerably by the increase in production of asbestos, gypsum, natural gas, petroleum and several other non-metallics. With the exception of coal, which was subjected to a severe setback owing to the strike in Nova Scotia in the early part of the year, the non-metallics generally showed improvement. Building operations in Canada during 1925 were slightly more extensive than in 1924 with the result that structural materials showed a gain of 6.4 per cent and nearly equalled the values reported in 1923. During the latter part of the year under review, mineral production generally showed an upward trend. This great industry in Canada represents a capital investment of more than half a billion dollars, employs upwards of sixty-five thousand hands, and is only surpassed by agriculture and forest production among the primary industries. Every province in the Dominion contributes annually to the output; the variety and wide distribution of Canada's mineral products and continued advance of the industry more particularly in recent years, have brought mining in Canada into great prominence.

Among the metals, increased outputs in comparison with the totals for the previous year were recorded in the case of bismuth, cobalt, copper, gold, molybdenite, lead, nickel, silver and zinc. In the non-metallic field, advances were made in the production of asbestos, fluorspar, graphite, gypsum, magnesite, natural gas, crude petroleum, quartz, salt and talc and soapstone. Among the structural materials, increases were recorded in the production of cement, most of the clay products, lime, sand and gravel, granite and limestone.

Considered by groups and compared with corresponding data for 1924, metals showed an advance of 14.3 per cent to a total of \$117,082,298; including coal, the values of the non-metallics produced increased \$55,792 over the previous year; while the structural materials and clay products group showed an increase of 6.4 per cent to a total of \$37,649,234. Canada's mineral output values in 1925 included: metallics, 51.67 per cent; non-metallics, 31.71 per cent; structural materials, 16.62 per cent; in 1924 metallics made up 48.86 per cent of the total while non-metallics amounted to 34.26 per cent and structural materials, 16.88 per cent.

Ontario was again the principal mineral producing province of Canada, the value of its output in 1925 being determined at \$87,980,436 or 38.82 per cent of the total for Canada. This percentage was slightly lower than that recorded in 1924, owing to the fact that the value of British Columbia's production increased from 52.3 million dollars in 1924 to \$64,485,242 in 1925 and accounted for 28.46 per cent of the total for the Dominion. Alberta came next with a total of \$25,318,866 or 11.17 per cent, winning third place in the list. Quebec's output, valued at \$24,284,527 or 10.72 per cent of the Dominion aggregate, was the second greatest record for this province being surpassed only in 1920, when the output of minerals was valued at 28.8 million dollars. Nova Scotia, which held third place in 1924, dropped to fifth place in 1925, with a total of \$17,625,612 or 7.78 per cent; and Manitoba, the Yukon, New Brunswick and Saskatchewan followed in the order named.

Ontario, with an area of 407,262 square miles, occupies first place among the mineral-producing provinces of the Dominion, and is particularly notable for its production of gold and silver. It is in this province only that cobalt and nickel are produced, supplying 90 per cent of the world's markets in these metals. Here also are produced one-third of Canada's copper, small quantities of platinum, lead, natural gas, salt, gypsum, quartz, crude petroleum, feldspar, talc, mica, garnets and pyrites. In the class of building materials there is also a large production of portland cement, bricks and other clay products, building stone, sand and gravel, and quick and hydrated lime.

Individual mines in Ontario are said to own the largest deposits in America of talc, feldspar, mica and graphite. Porcupine and Kirkland Lake are two of the most productive gold camps in the world and the rich silver ores of Cobalt, South Lorrain and Gowganda put these areas among the world's richest silver camps.

British Columbia has long been associated with mining, first as a placer gold producer and then in lode mining. This province yields more than two-thirds of Canada's copper production, about fifty per cent of the silver production, and the greater part of the lead and zinc produced in the Dominion. Gold production from this province amounts to about 12.66 per cent of the Dominion total. In this province, on Vancouver Island, along the Crowsnest Pass, and in different parts of the interior, there are large coal areas. Other minerals produced in less amounts include: cement, sand and gravel, lime, building stone, clay products, quartz, pyrites, fluorspar and gypsum, and in recent years sodium carbonate.

Production in 1925 surpassed all previous records, and in all phases of mining—prospecting, development and production, lode mining, placer mining and coal mining—great progress has been and still is being made in the Pacific coast province. The Sullivan mine of the Consolidated Mining and Smelting Company has now become recognized as one of the greatest lead and zinc mines in the world and the silver produced in association with these metals makes this mine the largest individual silver producer in Canada. It is also highly satisfactory that the metals, silver, lead and zinc contained in the crude ore of this mine, are now to a large extent being smelted, refined and prepared in finished condition for the market by this company's metallurgical works at Trail.

Alberta stood third in the list in 1925. The chief mineral product is coal, but outputs of natural gas, crude petroleum, clay products, lime, cement, stone, sand and gravel and bituminous sands, are also recorded. Considerable prospecting for oil has been going on in this province over a period of years and during the latter part of 1924, the Imperial Oil Company met success when their Royalite No. 4 well was put in the producing class.

While the main source of revenue from the mineral production of Quebec was among the non-metallics, the province also produced lead, zinc, silver, gold and chromite. Asbestos is the chief non-metallic mineral produced and the output of this commodity from the mines in the Eastern townships represents about 85 per cent of the world's production. Feldspar and mica are produced each year in considerable amounts. Other non-metallic minerals found in Quebec are graphite, magnesite, iron oxides, mineral waters, phosphate, pyrites, quartz and soapstone and there is a very considerable production of cement, brick and other clay products, lime, building stone, sand and gravel. Extensive prospecting in the

Rouyn field has resulted in the proving-up of many claims and the establishment of a very considerable metal-mining industry in this area yielding copper and gold is bound to result.

Nova Scotia produces coal, gypsum, clay products, gold, building stone, salt and several other mineral products of less importance. Labour troubles accounted for a decrease in the output of coal to the extent of about 1.7 million tons and this loss was the chief factor in causing this province to drop from third place in 1924 to fifth place in 1925.

Manitoba and Saskatchewan are primarily agricultural provinces, and the annual production of minerals in each of these is valued usually between one and two million dollars. However, in 1925, Manitoba's production was in the neighborhood of two and one-quarter millions. This province has a total area of 251,882 square miles. Of this, approximately two-fifths in the southern and southwestern sections, is agricultural and is the main source of the non-metallic minerals. The remaining three-fifths is Precambrian and at different points is being prospected by large companies for gold, copper and other metallic minerals. Transportation to and from the northern metal mining fields is costly and the development of properties in these areas has been retarded for this reason. The principal items of interest in the minerals of Saskatchewan are lignite coal, sodium sulphate, clay products, sand and gravel. There is also in this province a supply of high-grade pottery clay. Shipments have been made from time to time to Alberta, and hope is held out that this deposit may yet prove the basis of a ceramic industry within the province.

The Yukon, with its production value of nearly 2 million dollars, showed improvement over the preceding year. It is difficult, however, to compare the production of the Yukon territory from year to year owing to the practice there of making seasonal shipments to outside smelters. The principal minerals produced are silver, lead and placer gold, the latter becoming relatively less important in recent years. The Treadwell Yukon Company, a large silver-lead producer, established a concentrator on their property which put them in a position to ship high-grade concentrates and also to be of great assistance to nearby operators of smaller mines who could ship to the Treadwell Yukon Company and get quicker returns thus allowing them to do further development on their properties. The Treadwell Company cannot ship in the winter and must therefore pile up their high-grade ore and concentrates awaiting the opening of navigation in the spring. Thus, statements of smelter receipts and annual shipments from the Yukon often do not agree although production may have been fairly steady in the period under review.

In New Brunswick non-metallic mines are of chief interest. Small deposits of manganese and antimony are known to occur there but these have not been worked to any great extent in recent years. Of the non-metallics, coal is the most important but other minerals obtained are grindstones, gypsum, petroleum, natural gas, clay products, lime, stone, sand and gravel, and recently there has been some movement towards the development of oil shales.

Mention has been made of the inflation in prices during and immediately after the war, and in the study of production records, shown in terms of money values, the trend in prices must be taken into consideration. The *Internal Trade Branch* of the Bureau has developed a commodity price index based on the prices prevailing in 1913. Prices in that year are represented by the figure 100, and the index for subsequent years is expressed as a percentage of the prices prevailing in 1913. Several methods of grouping items have been adopted so that index numbers for many different groups of commodities are available, as well as a general index based on the prices of all commodities entering into the compilation. Taking the average price for 1913 as a base of 100, the index for non-ferrous metals in 1925 stood at 107.7 in January, 106.5 in February, 105.2 in March and 101.5, the low point for the year, in April. From that time on, it rose gradually until November when it reached 108, the high point for the year; in December it dropped back to 106. Non-metallic minerals and their products were from 74 to 77 per cent higher in price than the average quotations in 1913. At this level, prices in 1925 showed a slight drop from the average in the previous year when the index stood at 185. The non-metallic group includes such materials as coal, gas, lime, brick, stone, sulphur, etc.

The index number for iron and its products stood at 158.4 in January. It dropped each month from February to August when 147.7 was reached. In September the index rose to 148.5 but during the remaining three months of the year the index was fairly steady at about 147.

Nineteen mineral products reached a production value of one million dollars each or over in Canada during 1925 and contributed over 98 per cent of the total recorded value of the mineral production of the Dominion in that year. In order of total values these were, coal at \$49,261,951; gold, lead, nickel, copper, cement, silver, clay products (including brick, tile and pottery), asbestos, zinc, stone, natural gas, lime, sand and gravel, gypsum, cobalt, salt, petroleum, and platinum the output of which was valued at \$1,028,192.

In the following paragraphs the production of each of these commodities is considered in further detail, the metals being reviewed first, then the non-metals, and finally the clay products and other structural materials.

Increased production from Ontario's gold mines was the principal cause of the great advance in the amount of gold produced in Canada during 1925, when a new record output was established at 1,735,735 fine ounces worth \$35,880,826, an increase of 210,353 fine ounces or 13.7 per cent over the totals for the previous year. Ontario contributed 84.27 per cent of the total and British Columbia mines yielded 12.6 per cent; the balance was derived from mines in Nova Scotia, Quebec, Manitoba and the Yukon. Since 1914, Ontario has become by far the largest producer of gold in Canada. This remarkable increase has been brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The decline in production during 1918 was due to the abnormal conditions created by the war. There was a marked recovery in 1919 and this developed in the following years to a maximum in 1925. Power shortage in northern Ontario during the earlier months of 1923 seriously interfered with production, but the provision of adequate power facilities later in that year definitely removed the possibility of further power shortage.

In each of the past five years, new Canadian records have been established in the production of lead. By far the greatest output of any of the provinces is from the smelter of the Consolidated Mining and Smelting Company at Trail, B.C. This company refines the ores from the now famous Sullivan mine, one of the greatest in the world, and also draws customs ores from other silver-lead producing mines in the east and west Kootenay districts. Most of the Ontario production of lead comes from a mine at Galetta in Carleton county operated by the Kingdon Mining, Smelting and Manufacturing Company. The lead from the rich ores of the Mayo district in the Yukon territory and from the zinc-lead ores from Notre Dame des Anges in Quebec make up the total. Including all lead from these sources, the total production in 1925 reached 253,590,578 pounds valued at \$23,127,460, an increase of 78,105,079 pounds or 44.5 per cent above the quantity produced in 1924 and an advance of \$8,906,115 or 62.6 per cent above the total reported in the previous year.

Two companies, the International Nickel Company and the Mond Nickel Company produced nickel-copper ores throughout the year and operated smelters in the Sudbury area. As in previous years, the Mond Nickel Company shipped its matte for refining to Clydach, Wales, and the International Nickel Company shipped some matte to Huntington, West Virginia, to be made into monel metal, and part to Port Colborne, Ontario, where electrolytic nickel, refined nickel, nickel oxide, and converter copper were produced. There was an increase in the production of nickel in 1925 over 1924 of 4,320,764 pounds or 6.2 per cent. Prior to 1925 there was always a difference between the nickel production figures as reported by the Ontario Department of Mines and as published by the Dominion Bureau of Statistics. As a result of a conference held during the year 1925, it was agreed to adopt the same method of making up nickel totals in both offices and in this report the necessary changes in method have been made. Computed on the agreed plan, nickel production in 1925 totalled 73,857,114 pounds valued at \$15,946,672 as compared with 61,356,451 pounds worth \$12,126,739 in 1924. These figures include nickel in matte exported by the Mond Nickel Company and the International Nickel Company of Canada at 18 cents per pound, refined and electrolytic nickel

produced at Port Colborne valued at the average price obtained for such products sold during the year; nickel in nickel oxide sold from the Port Colborne refinery and the Deloro Smelter at its total selling value as oxide, and nickel contained in speiss residues exported valued at 18 cents a pound.

Copper contained in matte produced by the nickel-copper smelters of Ontario constituted about one-third of the total Canadian production; the output of blister copper from the Granby smelter along with a small amount from the Trail smelter contributed approximately another third; the remainder was made up of the recoverable copper from British Columbia and Quebec ores treated in foreign smelters, the greater part of this balance being credited to British Columbia ores. Copper production for the year as thus computed totalled 111,450,518 pounds which, valued at the average New York price for the year of 14.042 cents per pound, was worth \$15,649,882. This was an advance of 6,993,071 pounds or 6 per cent in quantity and \$2,045,344 or 15.0 per cent in value over the totals for 1924.

Silver production showed an advance over 1924 of 492,665 fine ounces to a total of 20,228,988 fine ounces valued at \$13,971,150. The average price for silver in 1925 was 69.065 cents per fine ounce as against 66.781 cents in 1924. Production in 1925 included silver contained in silver and gold bullion amounting to 10,219,359 fine ounces or 50.5 per cent of the total for Canada; silver contained in blister copper and lead bullion, 6,179,238 fine ounces or 30.5 per cent; and silver estimated to have been recovered from ores, concentrates, etc., exported 3,830,391 fine ounces or 19 per cent. The largest silver-producing mine in Canada in 1925 was the Sullivan, which is primarily mined for its lead and zinc. Other mines of note are the Premier on the Portland Canal in northern British Columbia, the Nipissing and Keeley mines in Ontario, and the Treadwell Yukon in the Mayo district.

Continued development of the world-famous Sullivan mine in British Columbia resulted in the establishment of another high record in the output of zinc in 1925. Although the Trail smelter is now able to handle the greater part of the output from this mine, concentrates have been exported to foreign smelters for treatment. Quebec also produces a small amount of zinc, concentrates being exported to Belgium. Including the recoverable zinc and concentrates exported and the refined zinc made at Trail, production during the year reached a total of 109,268,511 pounds valued at \$8,328,446, an advance of 10.4 per cent in quantity and 32.7 per cent in value over the totals for the previous year. The price of zinc on the St. Louis market in 1925 averaged 7.622 cents per pound as against 6.344 cents in 1924. The Canadian market is centred in Montreal and Toronto to which points the Consolidated Mining and Smelting Company is the most important shipper. The average yearly Montreal quotation for zinc was 9.06 cents per pound and the fluctuations on this market corresponded closely to the price changes in the United States market.

Sales of cobalt and its products in the form of metal oxides and salts and in residues exported during 1925 computed in terms of cobalt metal content comprised 1,116,492 pounds for which the producers received \$2,328,517. This was an increase of 17.6 per cent in quantity and 38.4 per cent in value over the production of 1924.

Six non-metallic minerals were each produced in sufficient volume to bring their total values above the million-dollar mark and to put them among the 19 principal minerals listed above; these were coal, asbestos, natural gas, gypsum, salt and crude petroleum. Production of coal from Canadian mines in 1925 amounted to only 13,134,968 short tons, marking a loss of approximately half-a-million tons from the total reported in the preceding year. Lower average values per ton and the decreased production reduced the aggregate value of the output to \$49,261,951 as compared with \$53,593,988 reported in 1924. This was the lowest aggregate value reported for the output of coal mines in Canada since 1917. Reductions in output occurred in the provinces of Nova Scotia, New Brunswick and Saskatchewan, whilst slight increases were noted in Alberta and British Columbia. Alberta took first place in production with 5,869,031 short tons. Nova Scotia which was the leading producing province in 1924, had an output of 3,842,978 tons. British Columbia, holding third place in output for the year, accounted for 2,742,252 tons—a considerable gain over the

total for the preceding year. Production of coal in Canada during 1925 included 8,939,607 tons of bituminous coal; 570,654 tons of sub-bituminous and 3,624,707 tons of lignite. Canada's consumption of coal in 1925 amounted to only 28,457,261 short tons or an average of 3.039 tons per capita as compared with a total of 29,243,501 tons, averaging 3.170 tons per capita in 1924. Of this total, 42.6 per cent was drawn from Canadian mines, 55.4 per cent from United States and 2 per cent from Great Britain. Small quantities were also imported from other countries. Coal from Canadian mines constituted an increasing percentage of the coal consumed in Canada in the years 1918 to 1920 and again in 1922, when 50 per cent of the total consumption was of Canadian origin. In 1921 and in the years 1923 to 1925 the proportion of Canadian coal consumed, ranged from 41.1 per cent to 42.8 per cent.

A new high record was established in the Canadian production of asbestos in 1925. Total shipments for the year were 290,389 short tons valued at \$8,988,360 as compared with 225,744 tons worth \$6,710,830 in 1924. The average price per ton received by the operators was \$30.95, while in 1924, receipts averaged \$29.73.

For the first time in the history of Canada the gas fields of the province of Ontario were superseded as the leading producer, by the more recently developed fields of Alberta. The Alberta production amounted to 9,119,500 thousand cubic feet; Ontario's production was 7,143,962 thousand cubic feet. New Brunswick's output during the same period was recorded at 639,235 thousand cubic feet. A small production was also reported from Manitoba. These four provinces produced in all 16,902,897 thousand cubic feet of gas, valued at \$6,833,005. This was an increase over 1924 of 13.5 per cent in quantity and 19.6 per cent in value.

Increased production of gypsum in Nova Scotia resulted in the establishment of a new high record for this mineral in 1925. Canada's total production for the year was 740,323 tons with a valuation of \$2,389,891 as compared with 646,016 tons at \$2,208,108 in 1924. Gypsum is shipped in several different forms: lump, crushed, fine ground or calcined. Nova Scotia is the principal source of supply, production in that province in 1925 amounting to 551,230 tons. Ontario produced 82,020 tons; New Brunswick, 71,745 tons; Manitoba, 35,088 tons, and British Columbia, 240 tons. In computing the production of gypsum the quantities reported in the different forms are added; the values are those given as at point of shipment. Slightly more than 70 per cent of the output was exported in 1925.

In 1925 the production of salt in Canada exceeded all previous records. Shipments during the year totalled 233,746 tons as compared with 207,979 tons produced in 1924. There was a considerable decline in value during the year, the average price for all grades being \$6.04 per ton as against \$6.61 in 1924. Most of the production is obtained from the salt wells of western Ontario, but a small amount is produced from the Malagash mine in Nova Scotia. Alberta also produces small quantities of salt.

Structural materials mentioned among the 19 principal mineral products were cement, clay products, stone, sand and gravel and lime. During the year under review, shipments of cement from Canadian plants showed an appreciable advance over the record for the previous year. Sales during 1925 totalled 8,116,597 barrels valued at \$14,046,704. Imports during the year amounted to 21,849 barrels, as against 27,672 barrels imported in 1924, a decrease of 5,823 barrels. Exports, on the other hand, showed a marked increase, when 997,915 barrels were sent out of the country as compared with 153,520 barrels during 1924.

The total value of clay products produced in Canada from domestic raw materials during 1925 was \$9,529,691 an increase of 3.4 per cent over the 1924 total of \$9,215,077. Sales in the province of Ontario were slightly greater in 1925 than in 1924 and stood at \$5,195,084. Nova Scotia, Manitoba, Alberta, and British Columbia producers all reported increased outputs, but there was a slight falling off in each of the other provinces. Stiff-mud process face and common brick produced during the year reached a value of \$3,519,113 while soft-mud process brick sold during the year had a total value of \$1,275,709. Dry press brick was valued at \$1,070,639. Structural tile reached a value of \$1,128,058; drain

tile \$401,503; pottery from Canadian clays \$267,255; and sewer pipe \$1,440,269. Fancy or ornamental brick showed a considerable decrease from the 1924 production. The value of sewer brick produced was up 28 per cent, while fire brick showed an increase of 43.2 per cent in quantity and 46 per cent in value.

Lime production showed an increase of \$209,111 or 6.5 per cent over the previous year and the value of sand and gravel produced remained practically the same.

Granite production in 1925 was nearly double that of 1924, while limestone showed approximately a quarter-million dollar increase. Marble and sandstone outputs were both lower than in the preceding year.

On the whole, conditions in the Canadian mining industry in 1925 were very satisfactory from an economic viewpoint. Third in rank among Canada's primary industries and contributing extensively to the wealth and prosperity of the Dominion, the mining industry provides large tonnages of freight for the transportation companies and keeps alive many subsidiary industries. Canada's progress in the production of mineral wealth has been notable particularly in recent years. Developments in established fields have won the confidence of the investing public; the discovery of new mineral areas has provided attractive opportunities for those of more speculative nature; the growth and evident stability of the mineral industry stamp it as one of the great and increasing factors in Canada's industrial and commercial life.

**Table 3.—Exchange Table Showing the Amount Paid in Canadian Dollars for one United States Dollar by Months, 1922-1925**

Month	1922	1923	1924	1925
	\$	\$	\$	\$
January.....	1-0553	1-0067	1-0275	1-0026
February.....	1-0351	1-0119	1-0322	1-0014
March.....	1-0297	1-0208	1-0294	1-0013
April.....	1-0208	1-0203	1-0184	1-0005
May.....	1-0125	1-0222	1-0166	1-0000
June.....	1-0138	1-0231	1-0141	1-0000
July.....	1-0091	1-0263	1-0064	0-9995
August.....	1-0023	1-0244	1-0011	0-9995
September.....	0-9998	1-0233	1-0078	1-0001
October.....	1-0011	1-0156	1-0016	0-9992
November.....	0-9998	1-0181	1-0000	0-9992
December.....	0-9966	1-0239	1-0015	1-0003
Average for the year.....	1-0145	1-0197	1-0131	1-0003

**Table 4.—Metal Prices 1921-1925**

Commodity	Market	Unit	1921	1922	1923	1924	1925
			\$	\$	\$	\$	\$
Antimony (ordinaries).....	New York.....	Pound....	0-04957	0-05471	0-07897	0-10836	0-17494
Arsenic, white.....	".....	".....	0-08850	0-08500	0-12050	0-09636	0-0466
Cobalt.....	".....	".....	3-00	3-25	2-85	2-75	2-50
Cobalt oxide.....	".....	".....	-	2-00	2-10	2-10	2-20
Copper.....	".....	".....	0-12502	0-12382	0-14421	0-13024	0-14042
Lead.....	".....	".....	0-04545	0-05734	0-07267	0-08097	0-09020
".....	Montreal*.....	".....	0-05742	0-06219	0-07179	0-08104	0-0912
Nickel.....	New York.....	".....	0-35	0-35	0-29353	0-28	0-34
Platinum.....	".....	Ounce.....	75-033	97-618	116-537	118-817	119-693
Silver.....	".....	".....	0-62654	0-67528	0-64873	0-66781	0-69065
Tin.....	".....	Pound....	0-28576	0-31831	0-41799	0-49674	0-56790
Zinc.....	St. Louis*.....	".....	0-04655	0-05716	0-06607	0-06344	0-07622

\*Quotations used in this report in computing value of mineral production.

Table 5.—Prices of Non-Metallic Minerals and Structural Materials, 1921-1925, Showing the Average Returns Received by Producers, f.o.b., Shipping Points in Canada as Computed from the Total Receipts and Total Shipments for the Year

Commodity	Unit	1921	1922	1923	1924	1925
Non-METALLIC		\$	\$	\$	\$	\$
Actinolite.....	Ton.....	12.50	11.50	11.00	13.60	12.50
Asbestos.....	".....	52.89	33.92	32.50	29.73	30.95
Barytes.....	".....	35.43	33.00	20.89	21.90	23.77
Chromite.....	".....	19.90	15.00			
Bituminous sands.....	".....					4.00
Coal.....	".....	4.81	4.32	4.24	3.93	3.75
Corundum.....	".....	138.87				
Feldspar.....	".....	7.73	8.96	8.13	8.00	8.22
Fluorspar.....	".....	24.69	22.68	12.46	17.66	4.94
Graphite.....	".....	70.29	52.52	60.98	57.05	61.79
Grinding pebbles.....	".....					9.00
Grindstones.....	".....	50.00	43.52	39.76	48.60	48.46
Gypsum (crushed).....	".....	2.56	2.26	1.90	1.82	1.83
Magnesite.....	".....	21.80	26.78	27.99	26.17	21.93
Magnesium sulphate.....	".....	19.47	23.52	54.38		
Manganese.....	".....	50.00	28.00			
Mica (rough cobbled).....	Pound.....	0.10	0.12	0.10	0.06	0.05
Mineral water.....	Gal.....	0.07	0.06	0.07	0.07	0.14
Natro-alumite.....	Ton.....	50.00	50.00	50.00		50.00
Natural gas.....	M. cu. ft.....	0.33	0.40	0.36	0.38	0.40
Oxides, iron.....	Ton.....	10.34	15.18	12.43	12.54	12.91
Peat.....	".....	4.00	4.83			
Petroleum, crude.....	Brl.....	3.42	3.41	3.66	2.91	3.76
Phosphate.....	Ton.....	15.00	9.45	20.00		11.81
Pyrites.....	".....	3.48	4.10	3.95	4.06	3.77
Quartz.....	".....	3.12	1.90	2.26	2.14	1.84
Salt.....	".....	10.16	8.96	8.46	6.61	6.04
Sodium carbonate.....	".....					7.26
Sodium sulphate.....	".....	30.25	23.76	13.90	5.54	5.06
Talc.....	".....	14.28	14.28	14.51	13.63	14.22
Tripolite.....	".....	33.00	26.39	25.00	25.40	
Volcanic ash.....	".....					8.62
STRUCTURAL MATERIALS AND CLAY PRODUCTS						
Cement, portland and puzzolan.....	Brl.....	2.47	2.22	2.00	1.78	1.73
Clay products—						
Brick, common.....	M.....	16.18	15.99	15.50		
Brick, pressed.....	".....	21.47	20.31	19.91		
Brick, hollow building.....	".....	48.88	91.72	80.35		
Brick, moulded and ornamental.....	".....	25.35	20.68	20.95		
Brick, face.....	Soft mud process.....				17.10	18.83
Brick, common.....					14.89	11.20
Brick, face.....	Stiff mud process, wire cut.....				22.86	20.06
Brick, common.....					15.09	14.08
Brick, face.....	Dry press.....				21.60	21.50
Brick, common.....					13.13	12.24
Brick, fancy or ornamental.....	".....				130.41	50.20
Brick, sewer.....	".....				15.15	21.07
Firebrick.....	".....	53.85	37.55	48.19	48.36	49.27
Fireclay.....	Ton.....	10.18	5.41	9.00	7.20	10.50
Fireproofing and hollow porous blocks.....	".....					9.46
Floor tile.....	Sq. ft.....					0.20
Kaolin.....	Ton.....	15.23	14.92	14.53		
Paving brick.....	M.....		39.81			
Roofing tile.....	No.....					0.08
Sewer-pipe.....	Ton.....		23.26	23.01	20.87	19.51
Tile, drain.....	M.....		27.65	30.50	27.04	27.59
Lime.....	Bush.....	0.40	0.35	0.33	0.34	0.33
Sand and gravel.....	Ton.....	0.22	0.30	0.24	0.28	0.29
Stone—						
Granite.....	Ton.....	2.94	3.24	2.91	2.41	2.07
Limestone.....	".....	1.55	1.32	1.21	1.14	1.08
Marble.....	".....	104.67	121.28	81.49	73.63	83.69
Sandstone.....	".....	2.75	3.20	2.92	2.54	1.66

Table 6.—Annual Values of the Mineral Production of Canada, 1886-1925

Year	Value of production	Value per capita	Year	Value of production	Value per capita
	\$	\$		\$	\$
1886.....	10,221,255	2.23	1906.....	79,286,697	12.81
1887.....	10,321,331	2.23	1907.....	86,865,202	13.75
1888.....	12,518,894	2.67	1908.....	85,557,101	13.16
1889.....	14,013,113	2.96	1909.....	91,821,441	13.70
1890.....	16,763,353	3.50	1910.....	103,823,623	14.93
1891.....	18,976,616	3.92	1911.....	103,220,994	14.32
1892.....	16,623,415	3.39	1912.....	135,048,296	18.33
1893.....	20,035,082	4.04	1913.....	145,634,812	19.35
1894.....	19,931,153	3.98	1914.....	128,863,075	16.75
1895.....	20,505,917	4.05	1915.....	137,109,171	17.44
1896.....	22,474,256	4.38	1916.....	177,201,534	22.05
1897.....	28,485,023	5.49	1917.....	189,646,821	23.18
1898.....	38,412,421	7.37	1918.....	211,801,897	25.37
1899.....	49,234,005	9.27	1919.....	176,686,390	20.84
1900.....	64,420,877	12.04	1920.....	227,859,665	26.40
1901.....	65,797,911	12.16	1921.....	171,923,342	19.56
1902.....	63,231,836	11.36	1922.....	184,297,242	20.55
1903.....	61,740,513	10.83	1923.....	214,079,331	23.41
1904.....	60,082,771	10.27	1924.....	209,583,406	22.71
1905.....	69,078,999	11.49	1925.....	226,583,333	24.19

Table 7.—Annual Values of Metallic and Non-Metallic Mineral Production of Canada 1907-1925

Year	Metallic	Non-Metallic		Total
		Fuels and other non- metallics	Structural materials and clay products	
	\$	\$	\$	\$
1907.....	42,426,607	31,275,546	12,863,049	*86,565,202
1908.....	41,774,362	32,142,784	11,339,955	*85,557,101
1909.....	44,156,841	31,141,251	16,533,349	91,831,441
1910.....	49,438,873	37,757,158	19,627,592	106,823,623
1911.....	46,105,423	34,405,960	22,709,611	103,220,994
1912.....	61,172,753	45,080,674	28,794,869	135,048,296
1913.....	66,361,351	48,465,709	30,809,752	145,634,812
1914.....	59,386,619	45,467,229	26,009,227	128,863,075
1915.....	75,814,841	45,373,571	17,920,759	137,109,171
1916.....	106,319,365	53,414,983	17,467,185	177,201,534
1917.....	106,455,147	65,354,363	19,837,311	189,646,821
1918.....	114,549,152	77,621,946	19,130,799	211,301,897
1919.....	73,262,793	76,002,087	27,421,510	176,686,390
1920.....	77,939,630	108,027,947	41,892,088	227,859,665
1921.....	49,343,232	87,842,682	34,737,428	171,923,342
1922.....	61,785,707	82,976,794	39,534,741	184,297,242
1923.....	84,391,218	91,936,732	37,751,381	214,079,331
1924.....	102,406,528	71,796,009	35,380,869	209,583,406
1925.....	117,082,298	71,851,801	37,649,234	226,583,333

\* Total includes \$300,000 allowed for products not reported.

Table 8.—Values of the Mineral Production of Canada by Provinces, 1899-1925

Year	Nova Scotia*	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon
	\$	\$	\$	\$	\$	\$	\$	\$	\$
1899	6,817,274	420,227	2,585,635	9,819,557		17,108,707		12,482,605	Included
1900	9,298,479	439,060	3,292,383	11,258,099		23,452,330		16,680,526	with
1901	7,770,159	467,985	3,759,984	13,970,010		19,297,940		20,531,831	Mani-
1902	10,686,549	607,129	3,743,636	14,619,091		16,127,400		17,448,093	toba,
1903	11,431,914	580,495	3,585,938	14,160,033		14,082,986		17,899,147	Saskat-
1904	11,212,746	559,913	3,688,482	12,582,483		12,713,613		19,325,174	chewan
1905	11,507,047	559,035	4,405,975	18,833,292		11,387,642		22,386,008	and
1906	12,894,303	646,328	5,242,058	25,111,682		10,092,726		25,299,600	Alberta
1907	14,532,040	664,467	6,205,553	30,381,638	898,775	533,251	4,657,524	25,656,056	3,335,898
1908	14,487,108	579,816	6,372,949	30,623,812	584,374	413,212	5,122,505	23,704,035	3,669,290
1909	12,504,810	657,035	7,086,265	37,374,577	1,193,377	456,246	6,047,447	22,479,006	4,032,678
1910	14,195,730	581,942	8,270,136	43,538,078	1,500,359	498,122	8,996,210	24,478,572	4,761,474
1911	15,409,397	612,830	9,304,717	42,796,162	1,791,772	636,706	6,662,673	21,299,305	4,707,432
1912	18,922,236	771,004	11,656,998	51,985,876	2,463,074	1,165,642	12,073,589	30,076,635	5,933,232
1913	19,376,183	1,102,613	13,475,534	59,167,749	2,214,496	881,142	15,054,046	28,086,312	6,276,737
1914	17,584,639	1,014,570	11,836,929	53,034,677	2,413,489	712,313	12,684,234	24,164,039	5,418,185
1915	18,088,342	903,467	11,619,275	61,071,287	1,318,387	451,933	9,909,347	28,689,425	5,057,708
1916	20,042,262	1,118,187	14,406,598	80,461,323	1,823,576	590,473	13,297,543	39,969,962	5,491,610
1917	21,104,542	1,435,024	17,400,077	89,066,600	2,628,264	860,651	16,527,535	36,141,926	4,482,202
1918	22,317,108	2,144,017	19,605,347	94,694,093	3,120,600	1,019,781	23,109,987	42,935,333	2,355,631
1919	23,445,215	1,770,945	21,267,947	67,917,998	2,868,378	1,521,964	21,087,582	34,865,427	1,940,934
1920	34,130,017	2,491,787	28,886,214	81,715,808	4,223,461	1,837,468	33,586,456	39,411,728	1,576,726
1921	28,912,111	1,901,505	15,157,094	57,356,651	1,934,117	1,114,220	30,562,229	33,230,460	1,754,955
1922	25,923,499	2,263,692	17,647,939	65,866,029	2,258,942	1,255,470	27,872,136	39,423,962	1,785,573
1923	29,648,893	2,462,457	20,308,763	80,825,851	1,768,037	1,047,583	31,287,536	43,757,388	2,972,823
1924	23,820,352	1,969,260	19,136,504	86,398,656	1,534,249	1,128,100	22,344,940	52,298,533	952,812
1925	17,625,612	1,743,858	24,284,527	87,980,436	2,276,759	1,076,392	25,318,866	64,485,242	1,791,641

\*Includes a small production from Prince Edward Island.

Table 9.—Percentage of the Total Value of the Mineral Production of Canada Produced by Each Province, 1921-1925

Province	1921	1922	1923	1924	1925
Nova Scotia*	16.82	14.12	13.85	11.38	7.78
New Brunswick	1.10	1.23	1.15	0.94	0.77
Quebec	8.82	9.57	9.49	9.12	10.72
Ontario	33.36	35.74	37.76	41.29	38.82
Manitoba	1.12	1.23	0.83	0.73	1.01
Saskatchewan	0.65	0.67	0.49	0.54	0.48
Alberta	17.78	15.13	14.60	10.61	11.17
British Columbia	19.33	21.39	20.44	24.94	28.46
Yukon	1.02	0.92	1.39	0.45	0.79
<b>Canada</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

\*Includes a small percentage from Prince Edward Island.

Table 10.—Values by Classes of Products of the Mineral Production of Canada, by Provinces, 1925

Province	Metallic	Non-Metallic	Structural materials and clay products	Total
	\$	\$	\$	\$
Nova Scotia*	33,671	16,972,719	619,222	17,625,612
New Brunswick		1,445,095	298,763	1,743,858
Quebec	1,501,533	9,603,481	13,179,513	24,284,527
Ontario	63,806,538	7,084,316	17,089,582	87,980,436
Manitoba	91,781	417,928	1,767,050	2,276,759
Saskatchewan		891,635	184,757	1,076,392
Alberta		23,632,321	1,686,545	25,318,866
British Columbia	49,864,306	11,797,134	2,823,802	64,485,242
Yukon Territory	1,784,469	7,172		1,791,641
<b>Canada</b>	<b>117,082,298</b>	<b>71,851,801</b>	<b>37,649,234</b>	<b>226,583,333</b>

\*Includes a small production from Prince Edward Island.

Table 11.—Mineral Production in Canada by Provinces, 1925

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon
<b>METALLIC</b>									
Antimony.....	Lb.			1,751					
	\$			206					
Arsenic.....	Lb.			2,156,441				1,277,696	
	\$			113,324				16,978	
Bismuth.....	Lb.			19,667					
	\$			18,566					
Cobalt.....	Lb.			1,116,492					
	\$			2,328,517					
Copper.....	Lb.		2,510,141	39,718,777				69,221,600	
	\$		352,474	5,577,311				9,720,097	
Gold.....	Fine oz.	1,626	1,602	1,461,036	4,424			219,227	47,817
	\$	33,612	33,116	30,202,357	91,452			4,531,820	983,465
Iron, pig, from Canadian ore.....	Tons								
	\$								
Iron ore sold for export.....	Tons								
	\$								
Lead.....	Lb.		3,978						
	\$		11,934						
Lead.....	Lb.		2,051,100	7,209,534				212,454,502	1,875,442
	\$		187,060	657,510				22,111,850	171,040
Manganese.....	Tons								
	\$								
Molybdenite.....	Lb.		22,350						
	\$		11,176						
Nickel.....	Lb.			73,857,114					
	\$			15,946,672					
Palladium, Rhodium, Os- mium, Iridium, Ruthen- ium.....	Fine oz.			8,288					
	\$			648,969					
Platinum.....	Fine oz.			8,692					
	\$			1,027,477					
Silver.....	Fine oz.	86	214,943	10,529,131	477			8,579,458	904,893
	\$	59	148,451	7,271,944	329			5,925,403	624,964
Zinc.....	Lb.		9,936,000	179,545				99,152,966	
	\$		757,322	13,685				7,557,439	
Total.....	\$	33,671	1,501,533	63,806,538	91,781			49,864,306	1,784,469
<b>NON-METALLIC</b>									
Actinolite.....	Tons			40					
	\$			500					
Asbestos.....	Tons		290,387		2				
	\$		8,987,459		901				
Barytes.....	Tons	95							
	\$	2,259							
Bituminous sands.....	Tons								
	\$						1,148		
Coal.....	Tons	3,842,978	208,012			471,965	5,869,031	2,742,252	730
	\$	15,826,680	815,367			870,875	20,021,484	11,720,373	7,172
Feldspar.....	Tons		11,287	17,394					
	\$		94,730	141,059					
Fluorspar.....	Tons			12					
	\$			200					
Garnets.....	Tons							3,874	
	\$							19,034	
Graphite.....	Tons								
	\$								
Grinding pebbles.....	Tons		359	2,210					
	\$		30,900	127,863					
Grindstones.....	Tons			105					
	\$			945					
Gypsum.....	Tons	439	1,642						481
	\$	16,723	79,661						27,781
Iron oxides.....	Tons	551,230	71,745						240
	\$	1,070,408	408,917						865
Magnesite.....	Tons			6,985					133
	\$			89,173					2,740
Mica.....	Tons			5,576					
	\$			122,325					
Mineral water Imp. Gals.	Tons			2,415	1,605				
	\$			178,800	82,663				
Natro-alunite.....	Tons			7,122	183,012				
	\$			2,961	25,452				
Natural gas... M cu. ft.	Tons								20
	\$								1,000
Peat.....	Tons	639,235		7,143,962	200		9,119,500		
	\$	122,394		3,958,006	60		2,752,545		
Petroleum, crude.....	Brls.			1,370					
	\$			8,394					
Phosphate.....	Tons	5,376		143,134			183,491		
	\$	18,756		386,555			845,394		
Pyrites.....	Tons		16						
	\$		189						
Quartz.....	Tons		12,250	685					2,670
	\$		36,750	8,799					13,350
Salt.....	Tons	1,352	6,459	188,560					853
	\$	6,760	30,064	324,526					2,262
	\$	6,598		226,315					
	\$	49,880		1,352,504			8,304		

Table 11.—Mineral Production in Canada by Provinces, 1925—Concluded

	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Saskat- chewan	Alberta	British Col- umbia	Yukon
<b>NON-METALLIC—Con.</b>									
Sodium carbonate...Tons								1,120	
\$								8,140	
Sodium sulphate...Tons						3,876			
\$						19,380			
Talc and soapstone...Tons			704	13,678					
\$			30,130	174,116				92	
Tripolite.....Tons								1,589	
\$									
Volcanic ash.....Tons						160			
\$						1,380			
Total.....	16,972,719	1,445,095	9,603,481	7,034,316	417,928	891,635	23,632,321	11,797,134	7,172
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>									
Cement, Portland...Brls			3,365,802	3,462,358	407,395		395,857	485,185	
\$			5,689,991	5,253,911	1,037,929		913,529	1,151,344	
Clay products—									
Brick—									
Soft mud process—									
Face.....M.			3	24,479	3,219				
\$			35	476,638	45,066				
Common.....M.	830	2,000	7,740	30,799	6,014	662		3,169	
\$	10,760	30,000	80,114	474,114	96,632	9,951		52,399	
Stiff mud process (wire cut)—									
Face.....M.	1,435		21,224	68,975	324	560	852	533	
\$	29,180		506,113	1,288,382	8,404	17,104	17,963	16,710	
Common (a)....M.	3,838		93,827	12,642	29	465	5,036	268	
\$	47,995		1,328,403	195,202	282	6,531	52,645	4,198	
Dry press—									
Face.....M.			2,919	32,016		77	922	1,267	
\$			91,551	638,812		2,634	16,525	50,982	
Common.....M.		250	800	4,587			11,930	4,486	
\$		2,800	7,200	64,377			137,436	58,322	
Fancy or orna- mental brick...M.			98	426					
\$			4,592	21,728					
Sewer brick.....M.				2,125				360	
\$				37,082				15,300	
Fire brick from domestic clay...M.		30		904		447	58	3,537	
\$	71,336	768		46,459		21,672	2,524	162,573	
Fireclay.....Tons	48	49				319		207	
\$	489	1,955				2,895		1,204	
Fireclay blocks and shapes.....\$	280					7,113		29,174	
Structural tile—hol- low blocks (includ- ing fire-proofing and load-bearing tile)—									
Tons	6,706		31,842	62,926	610	2,700	5,166	5,626	
\$	67,863		302,272	577,477	9,329	27,052	49,831	59,573	
Roofing tile.....No				78,479					
\$				6,323					
Floor tile (quarries) Sq. ft.				140,927					
\$				28,338					
Drain tile (b).....M.	66		50	13,496	278	20	84	558	
\$	2,020		1,906	360,710	14,080	1,000	3,373	18,414	
Sewer pipe (including copings, flue lining, etc.).....Tons	11,483		4,251	49,334			6,985	1,738	
\$	195,787		104,701	893,442			191,257	55,082	
Pottery, glazed or unglazed.....\$		33,949		86,000			147,306		
Lime—									
Quick lime.....Bush.	57	202,106	2,272,751	5,115,974	324,515		98,938	515,058	
\$	20	92,216	601,081	1,566,540	100,833		39,852	304,223	
Hydrated lime...Tons	287		9,432	41,610	4,403			4,718	
\$	3,444		72,249	477,585	69,397			60,212	
Sand and gravel(c).Tons	286,514	70,156	2,203,196	5,201,604	727,152	579,901	534,892	1,415,232	
\$	55,362	12,331	533,850	1,779,129	196,610	88,805	107,436	446,896	
Stone—									
Granite.....Tons	14,961	9,027	491,986	263,567				192,177	
\$	54,524	89,731	1,363,220	242,150				264,910	
Limestone.....Tons	84,939	16,864	1,677,514	2,750,115	62,770		3,979	58,172	
\$	73,717	35,012	2,160,790	2,530,621	188,496		6,868	54,059	
Marble.....Tons			3,046						
\$			254,922						
Sandstone.....Tons	2,225		70,370	9,030				5,877	
\$	6,445		76,523	44,562				18,227	
Total.....	619,222	298,763	13,179,513	17,089,582	1,767,050	184,757	1,686,545	2,823,802	
<b>Grand total.....</b>	<b>17,625,612</b>	<b>1,743,858</b>	<b>24,284,527</b>	<b>87,989,436</b>	<b>2,276,759</b>	<b>1,076,392</b>	<b>25,318,866</b>	<b>64,485,242</b>	<b>1,791,641</b>

(a) Includes 180 M valued at \$2,520 for P.E.I.

(b) Includes 22 M valued at \$500 for P.E.I.

(c) Includes 35430 tons valued at \$5,475 for P.E.I.

Table 12.—Mineral Production of Nova Scotia, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>Metallic—</b>		\$		\$		\$
Arsenic.....Lb.	45,000	2,250	381,092	15,244		
Gold.....Fine oz.	655	13,540	1,047	21,643	1,626	33,612
Manganese.....Tons	200	1,400				
Silver.....Fine oz.	25	16	44	29	86	59
<b>Non-Metallic—</b>						
Barytes.....Tons	209	4,368	151	3,308	95	2,259
Coal....."	6,597,838	28,170,458	5,557,441	22,280,554	3,842,978	15,826,680
Grindstones....."	256	7,906	338	12,525	439	16,723
Gypsum....."	341,705	747,934	441,752	915,845	551,230	1,070,408
Quartz....."					1,352	6,760
Salt....."	4,480	39,151	4,551	37,469	6,598	49,889
Tripolite....."	130	3,250	33	838		
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Clay products.....		413,974		359,288		*425,710
Lime.....Bush.	42,370	7,199	† 78	936	8,257	3,464
Stone.....Tons	138,682	177,090	67,535	111,824	102,125	134,686
Sand and gravel.....Tons	224,016	†60,357	306,873	†60,849	286,514	†55,362
<b>Total.....</b>		<b>29,648,893</b>		<b>23,820,352</b>		<b>17,625,613</b>

\* Includes clay products from P.E.I. valued at \$3,020.

† Includes railway ballast from P.E.I., valued at \$4,429 in 1923, \$11,490 in 1924, and \$5,475 in 1925.

†Tons.

Table 13.—Mineral Production of New Brunswick, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>ME TALIC—</b>		\$		\$		\$
Manganese ore.....Tons			584	4,088		
<b>Non-Metallic—</b>						
Coal....."	276,617	1,196,772	217,121	932,135	208,012	815,367
Grindstones....."	1,753	72,177	2,113	99,299	1,642	79,661
Gypsum....."	104,740	564,680	86,738	476,804	71,745	408,917
Natural gas.....M cu. ft.	640,300	126,068	599,972	113,577	639,235	122,394
Petroleum.....Brl.	8,826	35,642	5,561	21,313	5,376	18,756
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Clay products.....		62,587		74,994		69,473
Lime.....Bush.	329,548	143,814	208,180	108,890	202,106	92,216
Sand and gravel.....Tons	608,528	94,634	141,897	23,999	70,156	12,331
Stone....."	22,448	166,083	19,229	114,111	25,391	124,743
<b>Total.....</b>		<b>2,462,457</b>		<b>1,969,260</b>		<b>1,743,858</b>

Table 14.—Mineral Production\* of Quebec, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$	\$	\$		\$
<b>METALLIC—</b>						
Chromite..... Tons	3,558	52,650				
Copper..... Lb.			1,893,008	246,546	2,510,141	352,474
Gold..... Fine oz.	667	13,788	883	18,253	1,602	33,116
Iron ore, sold for export..... Tons	69	186	1,408	3,771	3,978	11,934
Lead..... Lb.	520,041	37,334	1,058,983	85,520	2,051,100	187,060
Molybdenite..... "			18,739	9,370	22,350	11,176
Silver..... Fine oz.	33,006	21,412	83,814	55,972	214,943	148,451
Zinc..... Lb.	336,240	24,197	2,909,008	184,547	9,936,000	757,322
<b>NON-METALLIC—</b>						
Asbestos..... Tons	231,476	7,519,906	225,572	6,618,930	290,387	8,987,459
Feldspar..... "	12,026	102,779	16,147	142,118	11,287	94,730
Graphite..... "	45	2,316	46	3,275	359	30,900
Magnesite..... "	4,801	134,382	3,873	101,356	5,576	122,325
Mica..... "	1,545	216,684	1,677	185,020	2,415	178,800
Mineral Water..... Imp. Gal.	5,421	2,408	7,683	2,288	7,122	2,961
Iron oxides..... Tons	9,911	123,186	7,146	88,540	6,985	89,173
Phosphate..... "	30	600			16	189
Pyrites..... "			4,032	10,619	12,250	36,750
Quartz..... "	13,376	68,936	17,893	87,267	6,459	30,064
Tale and soapstone..... "	590	19,993	449	20,273	704	30,130
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl.	3,173,993	6,347,986	2,758,316	4,796,959	3,365,802	5,689,991
Clay products..... Tons	163	2,437,229		2,435,695		2,426,887
Kaolin..... Tons		2,369				
<b>Lime—</b>						
Quicklime..... Bush.	2,198,071	576,731	2,219,359	640,990	2,272,751	601,081
Hydrated lime..... Tons	5,595	57,482	5,848	58,947	9,432	72,249
Slate..... "	1,836	17,289				
Sand and gravel..... "	1,055,817	206,175	2,197,145	414,428	2,203,196	533,850
Stone..... "	1,094,816	2,322,745	1,592,089	2,925,520	2,242,916	3,855,455
<b>Total.....</b>		<b>20,308,763</b>		<b>19,136,504</b>		<b>24,284,527</b>

\*There is also in this province an important production of aluminium from imported ores.

Table 15.—Mineral Production of Ontario, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Antimony..... Lb.					1,751	206
Arsenic, white..... "	5,158,617	582,785	3,745,225	313,281	2,156,441	113,324
Bismuth..... "			12,863	27,913	19,667	18,566
Cobalt..... "	888,061	2,530,974	948,704	1,682,395	1,116,492	2,328,517
Copper..... "	31,656,800	4,565,227	37,113,193	4,833,622	39,718,777	5,577,311
Gold..... Fine oz.	971,704	20,086,904	1,241,728	25,668,795	1,461,039	30,202,357
Iron ore, sold for export..... Tons	5,358	18,878				
Iron, pig, from Canadian ore (a)..... "	20,739	432,298	3,696	92,400		
Lead..... Lb.	4,401,494	315,983	5,055,368	409,687	7,209,534	657,510
Nickel..... "	62,453,843	18,332,077	69,536,350	19,470,178	73,857,114	15,946,672
Platinum..... Fine oz.	1,210	141,010	9,181	1,090,858	8,692	1,027,477
Palladium..... "	1,732	138,560	8,923	811,993	8,288	648,969
Rhodium, ruthenium, osmium, iridium..... "	(b) 304	45,000	593	51,120	(c)	
Silver..... Fine oz.	10,540,943	6,838,226	11,272,567	7,527,933	10,529,131	7,271,944
Zinc..... Lb.					179,545	13,685
<b>NON-METALLIC—</b>						
Actinolite..... Tons	53	583	90	1,225	40	500
Asbestos..... "	6	2,600	172	91,900	2	901
Barytes..... "	200	4,180				
Feldspar..... "	17,199	134,822	28,657	216,422	17,394	141,059
Fluorspar..... "	64	597	76	1,343	12	200
Garnet..... "	1,250	100,000	360	7,200		
Graphite..... "	1,068	65,557	1,288	72,842	2,210	127,863
Grinding pebbles..... "					105	945
Gypsum..... "	99,958	542,317	88,121	467,097	82,020	491,833
Mica..... "	1,980	110,290	2,414	172,252	1,605	82,663
Mineral water..... Imp. gal	227,030	14,047	201,670	13,133	183,012	25,452
Natural gas..... M. cu. ft.	8,128,413	4,066,244	7,150,078	3,798,381	7,143,962	3,958,006
Peat..... Tons					1,370	8,394
Petroleum..... Prl.	159,400	478,149	154,368	441,955	143,134	386,555
Pyrites..... Tons	25,134	99,716	11,429	44,542	685	8,799
Quartz..... "	225,110	483,285	111,645	192,855	188,560	324,526
Salt..... "	197,917	1,674,365	203,428	1,337,311	226,315	1,352,504
Talc..... "	9,531	125,124	10,718	130,577	13,678	174,116
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl.	3,296,428	5,855,589	3,564,499	5,668,671	3,462,358	5,253,911
Clay products..... "		6,270,615		5,089,299		5,195,084
Lime—						
Quicklime..... Bush.	4,810,421	1,373,823	4,391,050	1,401,545	5,115,974	1,566,540
Hydrated..... Tons	41,727	519,840	35,989	438,607	41,610	477,585
Sand and gravel..... "	8,146,433	2,006,958	6,174,284	2,041,959	5,201,604	1,779,129
Stone..... "	2,638,984	2,869,228	2,840,173	2,789,368	3,022,712	2,817,333
<b>Total</b> .....		<b>80,825,851</b>		<b>86,398,656</b>		<b>87,980,436</b>

(a) The total production of blast-furnace pig-iron in Ontario, in 1923 was 674,428 tons valued at \$15,995,496, in 1924 it was 465,888 valued at \$10,482,480, and in 1925 it was 368,604 tons valued at \$7,873,816.

(b) Rhodium and iridium.

(c) Included with palladium.

Table 16.—Sales and Shipments from the Mineral Industries of Ontario, 1924 and 1925  
(Quantities shown are final shipments during the year; values given are those reported as received, f.o.b., shipping point, by the shippers.)

Metal mining industries	1924		1925	
	Quantity	Marketed value as reported	Quantity	Marketed value as reported
		\$		\$
<b>SILVER-COBALT INDUSTRY—</b>				
Sold by South Ontario smelters—				
Silver bullion..... Oz.	4,309,595	2,936,927	2,813,071	1,985,755
Arsenic (As <sub>2</sub> O <sub>3</sub> )..... Lb.	3,596,165	309,108	2,005,252	108,789
Cobalt metal, oxide, salts, etc., (metal content)..... “	626,400	1,421,826	823,019	2,114,835
Nickel metal, oxide, salts, etc. (metal content)..... “	42,482	9,418	441,326	91,462
Sulphate..... “	10,672	533	13,834	692
Speiss residues exported..... Tons	637	235,317	542	211,991
Silver lead bismuth bullion..... Lb.	60,044	87,264	98,714	103,638
Clean up material..... Tons			29	32,205
Sold direct from Ontario silver mines—				
Silver bullion..... Oz.	5,004,992	3,369,664	5,551,112	3,823,921
Nuggets to provincial government..... “	15,406	10,398	910	674
Ores, concentrates and residues exported..... Tons	2,412	556,779	3,091	674,203
Total for silver-cobalt industry.....		8,937,234		9,148,165
<b>NICKEL-COPPER INDUSTRY—</b>				
Matte exported..... Tons	26,565	4,667,136	32,397	7,884,661
Refined nickel..... “				
Nickel oxides..... “		9,760,022		12,654,759
Converter copper..... “				
Precious metals..... Oz.	62,713	364,246	155,396	1,852,105
Total for nickel-copper industry.....		14,791,404		22,391,525
<b>GOLD MINING INDUSTRY—</b>				
Crude bullion..... Oz.	1,579,987	25,692,570	1,850,466	30,224,456
Exchange premium..... “		196,748		67
Slags exported..... Tons	39	30,919	41	30,429
Concentrates exported..... “			804	52,991
Temiskaming testing laboratory..... “	39	1,837		
Gross value.....		25,922,074		30,307,943
Less discount.....				2,905
Total for gold mining industry.....		25,922,074		30,305,038
<b>LEAD MINING AND SMELTING INDUSTRY—</b>				
Lead bullion..... Lb.	5,415,574	412,110	7,205,250	599,816
Zinc concentrates..... Tons			311	13,685
Total.....		412,110		613,501
<b>IRON MINING AND SMELTING INDUSTRY—</b>				
Pig iron from Ontario ores..... Tons	3,696	92,400		
<b>Totals—</b>				
(a) Metal mining and smelting industries listed above.....		50,155,764		62,458,229
(b) Non-Metallic mineral industries, as per Table 15.....		6,989,032		7,084,316
(c) Structural materials and clay products industries, as per Table 15.....		17,429,449		17,089,582
Grand Total of Sales.....		74,574,245		86,632,127

Table 17.—Mineral Production of Manitoba, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
METALLIC—						
Gold..... Fine oz.	31	641	1,180	24,393	4,424	91,452
Silver..... "	5	3	140	93	477	329
NON-METALLIC—						
Gypsum..... Tons	31,575	386,554	29,375	348,212	35,088	417,868
Natural gas..... M cu. ft.	200	60	200	60	200	60
STRUCTURAL MATERIALS AND CLAY PRODUCTS—						
Cement..... Brl.	320,218	817,664	286,948	746,750	407,395	1,037,929
Clay products.....		160,134		117,450		173,794
Lime..... Bush.	524,128	161,226	394,229	121,518	450,315	170,230
Sand and gravel..... Tons	595,549	123,478	359,535	81,897	727,152	196,601
Stone..... Tons	51,304	118,277	54,065	93,876	52,770	188,496
<b>Total.....</b>		<b>1,768,037</b>		<b>1,534,249</b>		<b>2,276,759</b>

Table 18.—Mineral Production of Saskatchewan, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
NON-METALLIC—						
Coal..... Tons	438,100	858,448	479,118	886,668	471,965	870,875
Sodium sulphate..... Tons	733	10,189	1,083	6,004	3,876	19,280
Volcanic ash..... "			245	1,103	160	1,380
STRUCTURAL MATERIALS AND CLAY PRODUCTS—						
Clay products.....		119,405		137,280		95,952
Sand and gravel..... Tons	438,319	59,541	702,713	97,045	579,901	88,805
<b>Total.....</b>		<b>1,047,583</b>		<b>1,128,100</b>		<b>1,076,392</b>

Table 19.—Mineral Production of Alberta, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
NON-METALLIC—						
Bituminous sand..... Tons			531	2,127	1,148	4,594
Coal..... Tons	6,854,397	28,018,303	5,189,729	18,884,318	5,869,031	20,021,484
Natural gas..... M cu. ft.	7,191,670	1,692,246	7,131,086	1,796,618	9,119,500	2,752,545
Petroleum..... Brl.	1,943	8,227	844	4,135	183,491	845,394
Salt..... Tons					833	8,304
STRUCTURAL MATERIALS AND CLAY PRODUCTS—						
Cement..... Brl.	318,756	740,940	416,534	945,700	395,857	913,529
Clay products.....		590,555		540,477		618,860
Lime..... Bush.	87,753	37,999	90,214	36,279	98,938	39,852
Sand and gravel..... Tons	888,216	199,255	615,594	115,969	534,892	107,436
Stone..... Tons			16,698	19,317	3,979	6,868
<b>Total.....</b>		<b>31,287,536</b>		<b>22,344,940</b>		<b>25,318,866</b>

Table 20.—Mineral Production of British Columbia, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Arsenic..... Lb.	1,217,970	41,780	495,250	19,768	1,277,696	16,978
Copper (a)..... "	55,224,737	7,963,959	65,451,246	8,524,370	69,221,600	9,720,097
Gold..... 1 line oz.	200,140	4,137,261	245,719	5,079,462	219,227	4,531,824
Iron ore sold for export..... Tons	243	1,215				
Iron, pig. from Canadian ores.....		14		350		
Lead..... Lb.	99,541,818	7,146,107	168,467,628	13,652,617	242,454,502	22,111,850
Platinum..... Fine oz.	7	816	5	569	6	715
Silver..... "	6,113,327	3,965,899	8,153,003	5,444,657	8,579,458	5,925,403
Zinc..... Lb.	60,050,000	3,967,504	96,000,069	6,090,244	99,152,966	7,557,439
<b>NON-METALLIC—</b>						
Coal..... Tons	2,823,306	13,813,520	2,193,667	10,601,698	2,742,252	11,720,373
Fluorspar..... "	75	1,135			3,874	19,034
Grindstones..... "			240	19,000	481	27,781
Gypsum..... "	323	1,615	30	150	240	865
Magnesium sulphate..... "	121	6,580				
Natro-alunite..... "	15	750			20	1,000
Oxides (iron)..... "	513	6,450	120	2,620	133	2,740
Pyrites..... "	3,457	13,304	8,091	40,459	2,670	13,350
Quartz..... "	25,590	47,029	21,258	43,034	853	2,262
Sodium carbonate..... "	265	3,975	510	5,173	1,120	8,140
Talc..... "	245	5,390	165	3,630	92	1,589
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>						
Cement..... Brl.	795,637	1,302,482	472,327	1,240,331	485,185	1,151,344
Clay products.....		426,138		460,594		523,931
<b>Lime—</b>						
Quicklime..... Bush.	564,971	338,443	517,577	320,312	515,058	304,223
Hydrated..... Tons	4,410	50,051	4,157	50,517	4,718	60,212
Sand and gravel..... "	434,194	266,119	1,105,459	344,937	1,415,232	446,896
Stone..... "	165,100	249,866	178,225	353,741	256,226	337,196
<b>Total.....</b>		<b>43,757,388</b>		<b>52,298,533</b>		<b>64,485,242</b>

(a) Smelter recoveries of copper.

Table 21.—Mineral Production of Yukon, 1923, 1924 and 1925

Product	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLIC—</b>						
Gold..... Fine oz.	60,144	1,243,287	34,825	719,897	47,817	988,465
Silver..... "	1,914,438	1,241,953	226,755	151,429	904,893	624,964
Lead..... Lb.	6,771,113	486,098	903,520	73,221	1,875,442	171,040
<b>NON-METALLIC—</b>						
Coal..... Tons	313	1,485	1,121	8,265	730	7,172
<b>Total.....</b>		<b>2,972,823</b>		<b>952,512</b>		<b>1,791,641</b>

## METALLICS

## ALUMINIUM

Up to the present time no commercial ores of aluminium have been discovered in Canada. This extremely useful metal has been produced in Canada since 1903 from ore imported mainly from the United States and in less amounts from France, at Shawinigan Falls, Quebec. The ore from which aluminium is produced, known as bauxite, is a variety of laterite, a rock containing varying proportions of hydrated oxides of iron and aluminium. In Europe, bauxite is found in commercial quantities in the south of France, particularly in the Dalmatia-Croatia-Istria region, and in the Bihar mountains in Roumania. Other important deposits are those of the United States, British and Dutch Guiana, India and the Gold Coast of Africa.

As there was only one company in Canada producing aluminium in 1925, production figures are not shown separately. There are several companies making aluminium ware of all kinds and a separate report is published annually by the Dominion Bureau of Statistics on this section of the trade.

Aluminium is a product of the electric furnace. Alumina, which has previously been recovered by chemical means from bauxite, is dissolved in molten cryolite, in the electric furnace and a low voltage current is passed through the melt to decompose the oxide into metallic aluminium and oxygen; the metal sinks to the bottom of the crucible. The free oxygen attacks the carbon of the furnace electrode forming carbon dioxide gas; for this reason the electrode consumption is high. Theoretically, there should be no loss of cryolite but in actual operations losses occur, which must be made good from time to time. The mineral cryolite used in the manufacture of aluminium occurs in Greenland; annual shipments amount to approximately 10,000 tons. The chief uses of aluminium are in the manufacture of alloys with other metals including copper, nickel, cobalt, iron, antimony, tin, zinc and magnesium, and there are many uses for the pure metal itself. Pure aluminium powder is used in the thermit process to reduce the oxides of certain metals to the metallic state. In the manufacture of some alloys, metals of low carbon content are required and in the preparation of these metals from their oxides, reduction by aluminium is found very desirable, and a great improvement over the older method of reduction by carbon. Powdered aluminium is also used in precipitation of gold and silver from cyanide solutions and because of its great affinity for oxygen, it is sometimes employed as a de-gasifier or a de-oxidizer in the manufacture of steel.

**Table 22.—Imports of Aluminium and its Products into Canada and Exports of Aluminium during 1923, 1924 and 1925**

	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Alumina.....	131,773,700	2,190,091	128,695,000	2,375,346	127,505,400	2,627,281
Cryolite ore.....	1,807,000	136,203	1,142,200	70,563	1,507,600	94,624
Aluminium—						
Ingots, blooms, bars.....	756,981	104,357	653,656	183,110	692,426	217,885
Tubing.....	73,103	30,770	47,247	27,064	82,086	45,409
Manufactures.....		468,518		485,037		519,653
Leaf foil.....		151,023		135,316		202,823
Household and hollow-ware.....		544,046		403,613		342,116
<b>Total.....</b>		<b>3,715,068</b>		<b>3,689,049</b>		<b>4,049,791</b>
<b>EXPORTS—</b>						
Aluminium—						
Ingots, bars, etc.....	17,585,400	3,380,198	18,146,700	3,990,857	27,267,800	6,558,910
Manufactures.....		797,635		767,430		793,170
<b>Total.....</b>		<b>4,177,833</b>		<b>4,758,287</b>		<b>7,352,080</b>

Table 23.—Monthly Average Prices of Ingot Aluminium 1923, 1924 and 1925

(At New York in cents per pound)

Month	1923	1924	1925
January.....	23-00	28-00	28-00
February.....	23-37	28-00	28-00
March.....	25-12	28-00	28-00
April.....	27-00	28-50	28-00
May.....	27-00	28-50	28-00
June.....	27-00	28-50	28-00
July.....	26-50	28-50	28-00
August.....	26-50	28-00	28-00
September.....	26-30	28-00	28-00
October.....	26-50	28-00	28-00
November.....	26-50	28-00	29-00
December.....	27-00	28-00	29-00
Average.....	25-98	28-17	28-17

Table 24.—World's Production of Aluminium, 1913 and 1921-1925

(From *The Mineral Industry*, 1925)

(Short tons)

Country	1913	1921	1922	1923	1924	1925
Austria.....	5,510	2,204	4,408	4,408	3,306	4,408
Canada.....	6,519	6,612	9,918	18,183	17,632	18,734
France.....	14,880	11,020	13,224	13,224	20,387	22,591
Germany.....	882	11,020	13,224	14,326	20,277	27,550
Great Britain.....	11,020	5,510	10,469	9,918	7,714	9,918
Italy.....	963	820	694	1,653	2,267	2,016
Norway.....	2,755	4,408	6,612	15,428	21,983	25,346
Switzerland.....	11,020	11,020	13,224	13,224	20,938	22,040
United States.....	32,509	31,683	57,304	106,894	93,670	102,486
Total.....	86,058	84,297	129,077	197,258	208,174	235,059

Table 25.—World's Production of Bauxite, 1913 and 1921-1925

(1913 from *The Mineral Industry*, 1918; 1921-1925 from *The Mineral Industry*, 1925)

(Metric tons)

Country	1913	1921	1922	1923	1924	1925
Austria.....		2,638	4,095	2,734	(a) 3,000	(a) 4,000
British Guiana.....		(c)	(c)	135,712	188,071	(a) 200,000
British India.....	1,203	6,759	4,998	6,652	23,632	(a) 25,000
Dutch Guiana.....			18,805	15,839	(a) 60,000	(a) 100,000
France.....	309,285	95,318	236,141	314,330	335,582	405,000
Germany.....		10,122	15,146	6,662	(a) 10,000	(a) 6,000
Roumania.....			3,737	4,162	(a) 5,000	(a) 7,000
Hungary (Data not available)						
Italy.....	6,953	49,120	68,646	98,055	(b) 145,520	198,000
Jugo-Slavia.....		10,021	31,290	32,631	(a) 37,000	(a) 65,000
Spain.....		184				
United Kingdom.....	8,417	2,305	5,953	3,534	5,241	(a) 7,000
United States.....	213,675	141,790	314,569	531,079	352,117	321,622
Total.....	539,533	318,257	701,380	1,151,369	1,165,133	1,338,622

(a) Estimated.

(b) Istria included under Italy.

(c) Closed

## ANTIMONY

There was no Canadian production of antimony reported during the years 1917-1924. In the year under review 1,751 pounds valued at \$206 were reported as contained in some silver-lead-bismuth bullion exported by Canadian smelters which treat the ores from the Cobalt district.

Ores of antimony are known to occur in British Columbia, New Brunswick, Nova Scotia, Ontario, Quebec and Yukon. The greater part of the Canadian output of refined antimony was produced in the years 1907, 1909, 1915 and 1916 by the Consolidated Mining and Smelting Co. of Trail, B.C. The remainder was from the New Brunswick ores treated locally.

Table 26.—Production of Antimony in Canada, 1886-1925

Year	Antimony ore		Refined regulus	
	Tons	Value	Pounds	Value
		\$		\$
1886.....	665	31,490		
1887.....	584	10,866		
1888.....	345	3,696		
1889.....	55	1,100		
1890.....	20½	625		
1891.....	10	60		
1892-1897.....				
1898.....	1,344	20,000		
1899-1904.....				
1905 (a).....	527			
1906 (a).....	782			
1907.....	2,016	65,000	63,850	5,108
1908 (b).....	148	5,443		
1909.....	35	1,575	61,207	4,285
1910.....	364	13,906		
1911-1914.....				
1915.....	1,341	81,283	59,440	11,888
1916.....	885	94,537	107,185	41,823
1917.....	361	22,000		
1918-1924.....				
1925.....	1	206		

(a) As recorded by the Nova Scotia Department of Mines; no value given.

(b) Exports.

Table 27.—Imports of Antimony into Canada, 1923, 1924 and 1925

	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
Antimony or regulus of.....	900,483	57,882	780,271	70,982	897,298	124,394
Antimony salts.....	19,883	4,904	16,412	3,408	36,262	6,838
<b>Total.....</b>	<b>920,366</b>	<b>62,786</b>	<b>796,683</b>	<b>74,390</b>	<b>933,561</b>	<b>131,232</b>

Table 28.—Monthly Average Prices of Antimony, 1923, 1924 and 1925

(Compiled from quotations given in the *Engineering and Mining Journal*—"Ordinaires" stand for Hungarian, Chinese or other "Foreign" brands)

(At New York in cents per pound)

Month	1923	1924	1925
	Ordinaires	Ordinaires	Ordinaires
January.....	6-884	10-279	17-428
February.....	7-290	10-935	19-759
March.....	8-885	11-442	15-553
April.....	8-380	9-952	12-553
May.....	7-477	8-755	15-770
June.....	6-839	8-403	16-500
July.....	7-097	8-477	17-779
August.....	7-753	9-839	17-683
September.....	7-633	11-022	17-143
October.....	8-005	11-519	18-029
November.....	9-156	14-385	20-000
December.....	9-365	15-024	21-692
<b>Average.....</b>	<b>7-897</b>	<b>10-836</b>	<b>17-494</b>

Table 29.—World's Production of Antimony and 1913 1921-1925

(From *The Mineral Industry*, 1921 and 1924)

(Metric tons)

Country	1913	1921	1922	1923	1924	1925
United States.....			4	9	33	33
Canada (a).....						1
Mexico.....	2,340	45	457	490	775	1,399
Bolivia.....	30	(b) 336	(b) 185	(b) 312	(b) 751	(b) 1,850
Peru.....		7				
Hungary.....			67	643	348	
Austria.....	1,038		172			
Austria-Hungary.....	840					
Germany.....						
France.....	5,170	1,118	814	437	873	795
Italy.....	360	40	183	271	455	70
Portugal.....	10					
Spain.....				41		
Jugo-Slavia.....						131
Serbia.....	250	600	160		410	350
Algeria.....	186	(b) 103	(b) 530	(b) 500	(b) 236	(b) 880
British South Africa.....	30		1			
China.....	13,032	(b) 14,752	(b) 14,316	(b) 14,244	(c) 13,168	(b) 19,040
Japan.....	20					
India.....		1				
Indo-China.....						50
Asia Minor.....	240	400	400	400	400	400
Victoria.....	960	150	730	421	163	288
New South Wales.....	10	40				
Queensland.....						
Western Australia.....						
<b>Total.....</b>	<b>24,516</b>	<b>17,592</b>	<b>18,019</b>	<b>17,768</b>	<b>17,753</b>	<b>25,156</b>

(a) Dominion Bureau of Statistic figures.

(b) Exports.

(c) Statistics of Hunan Antimony Association.

## ARSENIC

Arsenic occurs in Canada in the arsenical gold ores of Nova Scotia and British Columbia and in the silver-cobalt-nickel ores of Ontario.

Arsenical ores from Nova Scotia and British Columbia are exported for treatment as are also some ores from Cobalt, but the major part of the Dominion output of arsenic is produced by the smelters situated in the southern part of Ontario which treat the ores from Cobalt. In 1925, arsenic production amounted to 3,434,137 pounds valued at \$130,302. Of this amount Ontario contributed 2,156,441 pounds valued at \$113,324; British Columbia, 1,277,696 pounds valued at \$16,978. There was no production from Nova Scotia in 1925. Arsenic credited to British Columbia was recovered from ores exported for treatment in foreign smelters. In 1924, Ontario produced 3,745,225 pounds valued at \$313,281, British Columbia, 495,250 pounds valued at \$19,768, and Nova Scotia 381,092 pounds valued at \$15,244. During the year 1925, the price of arsenic decreased from 6.0 cents in January to 3.25 cents in December, averaging 4.65 cents for the year.

Arsenic is used mainly in the manufacture of insecticides and the annual consumption depends considerably on the activities of the boll-weevil, an insect which is very destructive to the southern cotton crop. In 1924 and 1925 this insect was not as destructive as in the immediate preceding years and the price of arsenic fell off.

Imports during the year amounted to 498,720 pounds having a value of \$30,305. Exports of white arsenic amounted to 486 tons valued at \$10,590; exports of arsenic contained in ore concentrates, etc., amounted to 881 tons valued at \$97,748.

Table 30.—Production of Arsenic in Canada, 1885-1925

Year	White arsenic		Year	Arsenic in ore exported*		White arsenic	
	Tons	Value		Tons	Value	Tons	Value
		\$			\$		\$
1885.....	440	17,600	1907.....	656	11,094	330	36,209
1886.....	120	5,460	1908.....	986	17,506	716	41,060
1887.....	30	1,200	1909.....	221	3,346	1,129	64,100
1888.....	30	1,200	1910.....	517	5,716	1,502	75,328
1889.....			1911.....			2,097	76,237
1890.....	25	1,500	1912.....			2,045	89,262
1891.....	20	1,000	1913.....			1,692	101,463
1892-3.....			1914.....			1,737	104,015
1894.....	7	420	1915.....			2,396	147,830
1895-8.....			1916.....			2,186	262,349
1899.....	57	4,872	1917.....	280	11,200	2,656	658,231
1900.....	303	22,725	1918.....	1,078	43,114	2,432	520,525
1901.....	695	41,676	1919.....	530	21,218	2,859	488,706
1902.....	800	48,000	1920.....	628	22,231	1,831	425,617
1903.....	257	15,420	1921.....			1,491	233,763
1904-5.....			1922.....	518	21,097	2,058	299,940
1906.....	201	14,058	1923.....	631	44,030	2,579	582,785
			1924.....	513	39,185	1,798	309,108
			1925.....	714	21,513	1,003	108,789
			<b>Total.....</b>	<b>7,305</b>	<b>261,250</b>	<b>37,572</b>	<b>4,800,448</b>

\*Computed as  $\text{As}_2\text{O}_3$ ; net value as reported by the operators.

Table 31.—Production, Exports and Imports of Arsenic, ( $\text{As}_2\text{O}_3$ ), for Canada, 1923, 1924 and 1925

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
From arsenical concentrates exported Tons	631	44,030	513	39,185	714	21,513
White arsenic..... “	2,579	582,785	1,798	309,108	1,003	108,789
<b>Total..... “</b>	<b>3,210</b>	<b>626,815</b>	<b>2,311</b>	<b>348,293</b>	<b>1,717</b>	<b>130,302</b>
<b>EXPORTS—</b>						
White arsenic (Arsenic n.o.p.)..... “	587	25,003	545	28,360	486	10,590
Arsenic in ore, concentrates, etc..... “	1,564	348,646	1,304	227,331	881	97,748
<b>IMPORTS—</b>						
White arsenic..... Lb.	457,422	66,280	3,105	319	498,720	30,305
Sulphide of arsenic..... “	7,339	1,244	14,387	2,008	21,810	2,974
Arsenate of soda..... “	4,940	475	1,687	220	6,361	1,709

Table 32.—Monthly Average Prices of Arsenic, 1923, 1924 and 1925

(From *Engineering and Mining Journal*)

Month	New York in cents per pound		
	1923	1924	1925
January.....	13-00	13-50	6-00
February.....	14-00	13-00	5-75
March.....	14-50	12-50	5-75
April.....	14-25	11-00	5-75
May.....	14-10	10-50	5-25
June.....	13-50	9-50	4-75
July.....	11-00	8-50	4-50
August.....	9-50	8-00	4-00
September.....	10-75	7-75	3-75
October.....	11-50	7-50	3-50
November.....	13-50	7-00	3-50
December.....	13-50	6-75	3-25
<b>Average.....</b>	<b>12-75</b>	<b>9-63</b>	<b>4-65</b>

Table 33.—\*World's Production of Arsenic ( $As_2O_3$ ) 1913 and 1921-1925(From *The Mineral Industry*, 1924)

(Metric tons)

Country	1913	1921	1922	1923	1924
Belgium.....		485	1,008	1,380	
Canada (a).....	1,535	1,353	2,337	2,913	2,097
China (b).....	(c) 547	100	29	589	
France—White arsenic.....					
Ore.....	4,427	580	941	4,245	10,552
Germany (d).....	1,892	2,000	2,000		
Ore.....	5,721	6,902			
Greece.....		768	987	1,176	
Japan.....	21	1,395	2,044	4,287	
Mexico.....		785	271	1,402	1,293
Portugal.....	925	268			
Queensland.....		224	407	620	573
Rhodesia (e).....		327	451	774	534
Spain.....	47				
Union of South Africa.....		2	3	5	
United Kingdom—White arsenic.....	1,722	1,049	994	1,631	3,250
Pyrites.....	36		360	741	304
United States.....	2,280	4,342	9,096	12,946	13,112

\*White arsenic except where noted otherwise. 1925 figures not available for any country but Canada.

(a) Dominion Bureau of Statistics figures. (b) Exports. (c) Arsenic trisulphide.

(d) Estimated arsenic in ore. (e) Ore.

## CHROMITE

There was no production of chromite in Canada during 1924 or 1925. In 1923, production totalled 3,558 tons, valued at \$52,650. During the same year, Canadian exports amounted to 3,750 tons with a value of \$64,890.

The mineral chromite ( $FeO$ ,  $Cr_2O_3$ ) is the commercial source of the metal chromium, which is of prime importance in the manufacture of chrome steel armour plate and other steels used in warfare. The metal is a necessary constituent of many high-speed cutting tools, and, in the manufacture of stainless steel, where it makes up from 12 to 14 per cent of the alloy, its use is well established.

Quebec has been the main source of chromite ore in Canada. Rhodesia, India and New Caledonia, supply over 90 per cent of the world's chromite.

During the war when the higher grades of ore from other countries were not easily obtainable, many low-grade deposits in Canada and the United States were opened up, and considerable metallurgical research was done in Canada on the reduction of chromium from the ore. When hostilities ceased, the demand fell off, with the result that the preliminary work then under way, was discontinued. Chromium metal may be obtained from chromium oxide by reduction with aluminium. The metal made in this manner is very pure and free from carbon. In less pure form, it has been made in the electric furnace directly from the ore, the resultant product containing small percentages of iron and carbon but not enough to cause any serious trouble when the metal is used in alloys with other metals. Ferro-chrome, also a product of the electric furnace, is made from a good grade of chromite ore, and the iron chromite alloy runs about 60 to 70 per cent chromium. This alloy can then be added in the required amounts to a bath of molten steel. Ferro-chrome requirements take about 40 per cent of the world's supply of chromite; about 35 per cent of the chromite produced is used in the manufacture of chromite refractories such as brick and other furnace linings, and about 25 per cent is used in the manufacture of chemicals.

Table 34.—Production of Chromite in Canada, 1886-1925

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1886.....	60	945	1908.....	7,225	82,008
1887.....	38	570	1909.....	2,470	26,604
1888-93.....			1910.....	299	3,734
1894.....	1,000	20,000	1911.....	157	2,587
1895.....	3,177	41,300	1912-13.....		
1896.....	2,342	27,004	1914.....	136	1,210
1897.....	2,637	32,474	1915.....	12,341	179,543
1898.....	2,021	24,252	1916.....	(a) 27,517	311,460
1899.....	2,010	21,842	1917.....	(a) 36,725	499,682
1900.....	2,335	27,000	1918.....	21,994	867,122
1901.....	1,274	16,744	1919.....	8,541	228,898
1902.....	900	13,000	1920.....	11,016	251,379
1903.....	3,509	51,129	1921.....	2,798	55,696
1904.....	6,074	67,146	1922.....	767	11,053
1905.....	8,575	93,301	1923.....	3,558	52,650
1906.....	9,035	91,859	1924.....		
1907.....	7,196	72,901	1925.....		
			<b>Total.....</b>	<b>187,727</b>	<b>3,175,543</b>

(a) A portion of this ore was sold to a customs mill in the district and the final shipments of ores and concentrates in 1916 were 15,249 short tons valued at \$310,902 or an average of \$20.39 per ton; and 23,713 tons valued at \$581,796 or an average of \$24.54 per ton in 1917.

Table 35.—Production in Canada, Imports and Exports of Chromite 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Quebec—Chromite.....	3,558	52,650				
EXPORTS.....	3,750	64,890				
IMPORTS—						
Bichromate of soda.....	693	103,093	877	126,670	816	107,035
Bichromate of potash.....	44	9,770	128	22,661	26	4,826

Table 36.—World's Production of Crude Chromite, 1913 and 1921-1925

(From *The Mineral Industry*, 1924)

(Metric tons)

Country	1913	1921	1922	1923	1924	1925
Brazil.....						
Bosnia (d).....	305				305	
Canada*.....		2,538	696	3,228		
Cuba.....		610	1	10,587	8,276	30,310
Greece.....	6,342	8,029	9,213	(b)14,509	14,327	
Guatemala.....		401				
India.....	5,670	35,322	23,144	55,115	46,194	
Japan.....		3,368	3,756	4,528	5,376	5,815
New Caledonia (a).....	63,370	29,458	10,718	23,226	15,292	
Queensland.....						
Rhodesia.....	63,384	45,533	84,799	87,702	156,692	123,222
Russia.....		2,220	(b)1,500	(c)970	(c)5,138	
Turkey.....	26,374	(b)10,000	2,540			
United States.....	250	256	361	231	237	110
Union of South Africa.....		1,078	87		4,572	

\* Dominion Bureau of Statistics figures.

(a) Exports. (b) Estimated in part.

(c) Fiscal year ending Oct. 1.

(d) Jugo Slavia after 1919.

## COBALT

Cobalt production in 1925 amounted to 1,116,492 pounds valued at \$2,328,517. Exports of cobalt including metal, oxides and various salts were valued at \$1,867,607.

Canadian cobalt production comprises cobalt in the various products sold by the south Ontario smelters plus the cobalt contained in ores and residues exported; the value given is the selling value at the plant as reported by the producing companies.

Silver-cobalt-nickel ores from the Cobalt district of northern Ontario have provided the larger proportion of the world's supply of cobalt since that camp was discovered in 1903. The Coniagas Reduction Company of Thorold, Ontario, and the Deloro Smelting and Refining Company at Deloro, Ontario, developed processes for the recovery of cobalt from these ores. Recovery of this metal is accomplished by feeding the ore into a blast furnace where a speiss is made containing silver, cobalt, nickel, a small amount of iron and other metals which occur in the ore. The speiss is then roasted to free it from arsenic, and then chloridized, leached with sulphuric acid to extract the copper, and cyanided to dissolve the silver. Silver in the cyanide solution is precipitated by means of aluminium dust. The "speiss residues" then remaining are transferred to another plant where the cobalt and nickel oxides are precipitated. In some cases the speiss residues are exported to foreign countries where the cobalt, nickel and silver are recovered.

Cobalt oxide is marketed either in the black or gray form; the black oxide contains about 70 per cent cobalt metal and the gray, about 75 per cent cobalt metal. Gray oxide is made by giving the black oxide a slight roast in a reducing atmosphere in a reverberatory furnace. Cobalt salts of various kinds are also made, and if the pure metal is required, the black oxide is reduced in the reverberatory furnace using charcoal as the reducing agent.

The market for cobalt which was very poor in 1915 gradually improved during the war. No quotations on the New York market were available during 1918, 1919 or 1920. During 1921 the quotations given in the *Engineering and Mining Journal* ranged from \$3 to \$3.50 per pound; the former value was used in computing the annual production values. In 1922, the average price \$3.25 per pound, was used. In 1923, the quotation, \$2.85 was used, but in 1924 the value given in the report was based on the returns actually received by the operators for the products sold; this averaged about \$1.77 per pound of metal and in 1925 it amounted to about \$2.08. The New York quotation for metal in 1925 ranged from \$2.75 to \$2.50 per pound.

**Bounties.**—Under the provisions of the *Metal Refining Act*, passed by the Ontario Legislature in 1907, bounties were paid to refineries amounting to \$126,987.08 on cobalt metal, cobalt oxide, and salts of cobalt, and \$43,153.85 on nickel oxide, and salts of nickel, or a total for both cobalt and nickel of \$170,140.93. The quantities produced and the bounties paid each year are given in detail in the annual reports of the Ontario Bureau of Mines.

The bounty was at the rate of 6 cents per pound on the metallic content of the oxides. The Act which expired in April, 1917, was not re-enacted.

An historical summary of the production in Canada which dates from the year 1904 is shown in the following table. For the years 1904 to 1910 inclusive, the figures given were prepared by the Ontario Bureau of Mines, and represent the estimated cobalt content of the ores shipped from the mines. From 1911 to date, the quantities given are the cobalt content of smelter products sold or shipped, such as cobalt metal, the oxides, mixed oxides and residues, etc.

Table 37.—\*Production of Cobalt from Canadian Ores, 1904-1925

Year	Pounds	Year	Pounds	Year	Pounds
1904.....	32,000	1911.....	1,704,090	1918.....	737,157
1905.....	236,000	1912.....	663,093	1919.....	570,371
1906.....	642,000	1913.....	865,937	1920.....	546,023
1907.....	1,478,000	1914.....	871,891	1921.....	251,986
1908.....	2,448,000	1915.....	504,212	1922.....	616,088
1909.....	3,036,000	1916.....	840,536	1923.....	760,105
1910.....	2,196,000	1917.....	1,079,572	1924.....	948,704
				1925.....	1,116,492

\*See preceding paragraph.

Table 38.—Summary of Cobalt Production Statistics for Canada, 1924-1925

	1924			1925		
	Total quantity	Cobalt content	Value as reported by smelters	Total quantity	Cobalt content	Value as reported by smelters
	Tons	Lb.	\$	Tons	Lb.	\$
Ores and residues treated.....	5,253			4,229		
Output of smelters as metallic cobalt, cobalt oxide, unseparated oxides, cobalt salts, speiss and other residues, and cobalt ores and residues exported.....		948,704	1,682,395		1,116,492	2,328,517

Table 39.—Imports into Canada and Exports of Cobalt, 1923, 1924 and 1925

	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
<b>IMPORTS—</b>		\$		\$		\$
Ore.....	600	576				
<b>Total.....</b>	<b>600</b>	<b>576</b>				
<b>EXPORTS—</b>						
Cobalt metal.....	239,614	571,908	170,513	382,225	292,951	661,222
Cobalt oxides and salts.....	486,239	886,746	490,505	908,122	643,872	1,165,607
Cobalt alloys.....	422	1,997	2,421	11,930	17,061	40,778
<b>Total.....</b>		<b>1,460,651</b>		<b>1,302,277</b>		<b>1,867,607</b>

Table 40.—Imports of Cobalt into the United States 1919-1925

(From *The Mineral Industry* 1925)

Year	Ore		Cobalt		Zaffer		Oxide	
	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$
1919.....	17,045	2,832	60,511	141,450			131,424	184,751
1920.....	13,039	4,794	143,603	326,864	220	14	202,724	369,665
1921.....	7,657	3,235	38,442	105,539			164,003	342,426
1922.....	5,195	7,075	126,364	321,396			217,530	435,895
1923.....	58,719	56,326	225,639	552,434			258,594	511,903
1924.....	27,786	37,276	118,952	264,935			226,703	440,898
1925.....	34,782	31,320	198,669	422,185			287,265	525,803

Table 41.—Monthly Average Prices of Cobalt, 1923, 1924 and 1925

Month	(a) London in shillings per pound			(b) New York in cents per pound		
	1923	1924	1925	1923	1924	1925
January.....	11/	12/	12/	285	300	275
February.....	11/	12/	12/	285	275	275
March.....	11/	12/	10/	285	275	275
April.....	11/	12/	10/	285	275	275
May.....	11/	11/	10/	285	275	275
June.....	11/	12/	12/	285	275	275
July.....	11/	11/	12/	300	375	275
August.....	11/	12/	11/	300	275	250
September.....	12/	12/	10/	300	275	250
October.....	12/	12/	10/	300	275	250
November.....	12/	12/	10/	300	275	250
December.....	12/	12/	10/	300	275	250

(a) From *The Mining Journal*, London, E.C.(b) From *Engineering and Mining Journal*, New York.

## COPPER

Production of copper from Canadian ores during 1925 amounted to 111,450,518 pounds which at the average New York price during the year of 14.042 cents per pound amounted in value to \$15,649,882 as against 104,457,447 pounds valued at \$13,604,538 or an average price of 13.024 cents per pound in the preceding year. The increase amounted to 6.6 per cent in quantity and 15.01 per cent in total value.

Production in 1925 included (a) 33,259,609 pounds of blister copper, (b) 39,272,989 pounds of copper in matte some of which was exported and some refined in Canada, (c) 30,342 pounds contained in copper sulphate, (d) 38,887,578 pounds, the estimated recoveries from ores and concentrates exported. The corresponding figures for 1924 were (a) 35,109,895 pounds, (b) 36,979,424 pounds, (c) 31,825 pounds and (d) 32,336,303 pounds. Refined copper was produced commercially in quantity for the first time in Canada in 1916 at the Trail refinery of the Consolidated Mining and Smelting Company. The copper refinery of this company was not operated during 1923 but it produced a small quantity in 1924 and 1925. The British America Nickel Corporation which produced refined copper at the Déschênes plant for the first time in 1920, went into liquidation during July, 1924. The total production of refined copper in Canada during the past nine years was as follows:—

Calendar year	1917	3,901 tons
"	1918	3,809 "
"	1919	3,457 "
"	1920	2,530 "
"	1921	2,143 "
"	1922	365 "
"	1923	824 "
"	1924	1,763 "
"	1925	170 "

Copper sulphate is produced at Trail, B.C., by the Consolidated Mining and Smelting Company and in small amounts, by the Coniagas Reduction Company, Thorold, Ont. The amounts produced were 643,910 pounds in 1921; 230,835 pounds in 1922; 307,135 pounds in 1923; 127,301 pounds in 1924; and 121,746 pounds in 1925.

Copper sulphate is a by-product in the parting of gold and silver by the action of boiling concentrated sulphuric acid, the silver being dissolved as the sulphate and recovered by precipitating it with metallic copper. Copper sulphate may also be produced by treating scrap copper with a spray of dilute sulphuric acid in the presence of air. Copper sulphate forms blue crystals soluble in water. Heated to 240° C., these crystals lose their water of crystallization and become a white anhydrous powder. Blue vitriol, or copper sulphate in solution, is used in the preparation of insecticides and germicides, and for many other purposes.

Table 42.—Production of Copper from Canadian Ores, 1886-1925

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per pound
		\$				\$	
1886	3,505,000	385,550	11-00	1906	55,609,888	10,720,474	19-278
1887	3,260,424	366,798	11-25	1907	56,979,205	11,398,120	20-004
1888	5,562,864	927,107	16-66	1908	63,702,873	8,413,876	13-208
1889	6,809,752	936,341	13-75	1909	52,493,863	6,814,754	12-982
1890	6,013,671	947,153	15-75	1910	55,692,369	7,094,094	12-738
1891	9,529,401	1,226,703	12-87	1911	55,648,011	6,886,998	12-376
1892	7,037,275	818,580	11-55	1912	77,832,127	12,718,548	16-341
1893	8,107,856	871,809	10-75	1913	76,976,925	11,753,606	15-269
1894	7,708,789	736,960	9-56	1914	75,735,960	10,301,606	13-602
1895	7,771,639	836,228	10-76	1915	117,150,028	17,410,635	17-275
1896	9,393,012	1,021,960	10-88	1916	109,227,332	20,687,989	27-180
1897	13,300,802	1,501,660	11-29	1917	118,769,434	29,250,536	24-628
1898	17,747,136	2,134,980	12-03	1918	75,053,581	14,023,265	18-691
1899	15,078,475	2,655,319	17-61	1919	81,600,691	14,244,217	17-456
1900	18,937,138	3,065,922	16-19	1920	47,620,820	5,953,555	12-502
1901	37,827,019	6,096,581	16-117	1921	42,879,818	5,738,177	13-332
1902	38,804,259	4,511,383	11-626	1922	86,881,537	12,529,186	14-421
1903	42,684,454	5,649,487	13-235	1923	104,457,447	17,604,538	13-024
1904	41,383,722	5,306,635	12-823	1924	111,450,518	15,649,882	14-042
1905	48,092,753	7,497,660	15-590	1925			

Table 43.—Production of Copper from Canadian Ores, by Provinces, 1923, 1924 and 1925

Province	1923			1924			1925		
	Pounds	Value	Per cent	Pounds	Value	Per cent	Pounds	Value	Per cent
		\$			\$			\$	
Quebec.....				1,893,008	246,546	1-8	2,510,141	352,474	2-2
Ontario.....	31,656,800	4,565,227	36-5	37,113,193	4,833,622	35-5	39,718,777	5,577,311	35-7
British Columbia.....	55,224,737	7,963,959	63-5	65,451,246	8,524,370	62-7	69,221,600	9,720,097	62-1
<b>Total.....</b>	<b>86,881,537</b>	<b>12,529,186</b>	<b>100-0</b>	<b>104,457,447</b>	<b>13,601,538</b>	<b>100-0</b>	<b>111,450,518</b>	<b>15,649,882</b>	<b>100-0</b>

## QUEBEC

There was no production of copper ore reported for the province of Quebec for 1922 and 1923 but in 1924 there were 1,893,008 pounds estimated as recoverable from ores exported for treatment in foreign smelters. In 1925, the output amounted to 2,510,141 pounds, contained in copper pyritic ore shipped to an American smelter.

There was considerable activity in the copper-gold fields of north western Quebec during the year. Diamond-drilling proved up some very large ore bodies and when the proposed smelter is put in operation Quebec production of copper will be considerably augmented.

Table 44.—Production of Copper from Quebec Ores, 1886-1925

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	3,340,000	367,400	1900.....	2,220,000	359,418	1914.....	4,201,497	571,488
1887.....	2,937,900	330,514	1901.....	1,527,442	246,178	1915.....	4,197,482	725,115
1888.....	5,562,864	927,107	1902.....	1,640,000	190,666	1916.....	5,703,347	1,551,424
1889.....	5,315,000	730,813	1903.....	1,152,000	152,467	1917.....	5,015,560	1,363,229
1890.....	4,710,606	741,920	1904.....	760,000	97,455	1918.....	5,869,649	1,445,577
1891.....	5,401,704	695,469	1905.....	1,621,243	252,752	1919.....	2,691,695	503,105
1892.....	4,883,480	564,042	1906.....	1,981,169	381,930	1920.....	880,638	153,724
1893.....	4,468,352	480,348	1907.....	1,517,990	303,659	1921.....	352,302	44,045
1894.....	2,176,430	208,067	1908.....	1,282,024	169,330	1922.....		
1895.....	2,242,462	241,288	1909.....	1,088,212	141,272	1923.....		
1896.....	2,407,200	261,903	1910.....	877,347	111,757	1924.....	1,893,008	246,546
1897.....	2,474,970	279,424	1911.....	2,436,190	301,503	1925.....	2,510,141	352,474
1898.....	2,100,235	252,658	1912.....	3,282,210	536,346			
1899.....	1,632,560	287,494	1913.....	3,455,887	527,679	<b>Total.....</b>	<b>107,810,802</b>	<b>17,097,586</b>

## ONTARIO

Statistics of copper production in Ontario, include the amounts of recoverable copper in copper-nickel matte made in the smelting of the nickel ores, copper in cobalt flotation concentrates exported, and the copper in gold ores and concentrates exported. As thus computed the total production for the year 1925 amounted to 39,718,777 pounds; of this amount, copper in the matte contributed 39,272,989 pounds.

The bounty offered by the Ontario Government on copper, 95 per cent pure and on copper sulphate produced from ore mined and refined in the province was never gained, and the Act known as the *Metal Refining Bounty Act* warranting the bounty which expired April 10, 1917, was not re-enacted.

Table 45.—Production of Copper from Ontario Ores, 1886-1925

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	165,000	18,150	1899.....	5,723,324	1,007,877	1912.....	22,250,601	3,635,971
1887.....	322,524	36,284	1900.....	6,740,058	1,091,215	1913.....	25,885,929	3,952,522
1888.....			1901.....	8,685,831	1,401,507	1914.....	28,948,211	3,937,536
1889.....	1,466,752	201,678	1902.....	7,408,202	861,278	1915.....	39,361,464	6,799,693
1890.....	1,303,065	205,233	1903.....	7,172,533	949,285	1916.....	44,997,035	12,240,094
1891.....	4,127,697	531,234	1904.....	4,913,594	630,070	1917.....	42,867,774	11,651,461
1892.....	2,203,795	254,538	1905.....	8,779,259	1,368,686	1918.....	47,074,475	11,593,502
1893.....	3,641,504	391,461	1906.....	10,638,231	2,050,838	1919.....	24,346,623	4,550,627
1894.....	5,207,679	497,854	1907.....	14,104,337	2,821,432	1920.....	32,059,993	5,596,392
1895.....	4,576,337	492,414	1908.....	15,005,171	1,981,883	1921.....	12,821,385	1,602,930
1896.....	3,167,256	344,598	1909.....	15,746,699	2,044,237	1922.....	10,943,636	1,464,477
1897.....	5,500,652	621,023	1910.....	19,259,016	2,453,213	1923.....	31,656,800	4,565,227
1898.....	8,375,223	1,007,539	1911.....	17,932,263	2,219,297	1924.....	37,113,193	4,833,622
						1925.....	39,718,777	5,577,311
<b>Total.....</b>						<b>Total.....</b>	<b>622,231,898</b>	<b>107,484,189</b>

## MANITOBA

During the years 1917 to 1920 the province of Manitoba was on record as one of the copper-producing provinces in Canada. The total production for the four years amounted to 9,866,328 pounds having a total value of \$2,039,942. The record was as follows—1917—1,116,000 pounds, valued at \$303,329; 1918—2,339,751 pounds valued at \$576,234; 1919—3,348,000 pounds valued at \$625,775 and 1920—3,062,577 pounds valued at \$534,604. These amounts were estimated as recoverable copper in ores shipped by the Mandy Mining Company operating near Schist lake in The Pas district of northern Manitoba. During 1921, 1922, 1923 and 1924 with increasing production costs, high freight rates, and other transportation difficulties it was found impossible to operate, and no copper ores were shipped.

Much development has been carried on in this district during the past nine years. Toward the end of 1919 the Mandy Company suspended operations, and has since sold its equipment, which has been installed on the Flin Flon group of claims at Flin Flon lake in the same district.

## BRITISH COLUMBIA

British Columbia, the greatest copper-producing province of the Dominion, was credited in 1925 with a production of 69,221,600 pounds, as against 65,451,246 pounds in 1924, an increase of 6 per cent. The British Columbia output amounted to 62.1 per cent of the total Canadian production for 1925 and 62.5 per cent of the total for 1924.

In the total there are included the quantities of blister copper produced at Anyox by the Granby Consolidated Mining, Smelting, and Power Company, the blister copper and the copper contained in copper sulphate made by the Consolidated Mining and Smelting Company at Trail, and copper estimated as recoverable from the ores and concentrates exported. The Britannia mine on the shore of Howe Sound, a short distance north of Vancouver, is one of the largest producers of copper concentrates and ores which are shipped to Tacoma, Washington, U.S.A., for smelting.

Table 46.—Production of Copper from British Columbia Ores, 1894-1925

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
					\$			\$
1894*	324,680	31,039	1905*	37,692,251	5,876,222	1916	63,642,550	17,312,046
1895*	952,840	102,526	1906*	42,990,488	8,287,706	1917	57,730,959	15,691,275
1896*	3,818,556	415,459	1907*	40,832,720	8,168,177	1918	62,865,681	15,482,560
1897*	5,325,180	601,213	1908	37,041,115	4,892,390	1919	44,502,079	8,317,884
1898*	7,271,678	874,783	1909	35,658,952	4,629,245	1920	45,319,771	7,911,019
1899*	7,722,591	1,359,948	1910	35,270,006	4,492,693	1921	34,447,127	4,306,580
1900*	9,977,080	1,615,289	1911	35,279,558	4,366,198	1922	31,936,182	4,273,700
1901*	27,603,746	4,448,896	1912	59,526,656	8,256,561	1923	55,224,737	7,963,959
1902*	29,636,057	3,445,488	1913	45,791,579	6,991,916	1924	65,451,246	8,524,370
1903*	34,359,921	4,547,735	1914	41,219,202	5,606,636	1925	69,221,600	9,720,097
1904*	35,710,128	4,579,110	1915	56,692,988	9,793,714			
						<b>Total</b>	<b>1,152,639,904</b>	<b>192,886,437</b>

\*Metal content of ores shipped as published by the Provincial Bureau of Mines.

## YUKON

There are important deposits of copper-bearing ore in the Yukon Territory some of which were operated during the period from 1906 to 1920. Since then no production of copper has been reported, and the grand total for the Territory remains at 12,912,507 pounds, or a little greater than that of Manitoba.

Table 47.—Production of Copper from Yukon Ores, 1906-1925

Year	Pounds	Value	Year	Pounds	Value
		\$			\$
1906 (and previous).....	156,000	23,400	1914	1,367,050	185,946
1907.....	511,838	102,388	1915	533,216	92,113
1908.....	112,264	14,828	1916	2,807,096	763,586
1909.....			1917	2,460,079	668,650
1910.....	286,000	36,431	1918	619,878	152,663
1911.....			1919	165,184	30,874
1912.....	1,772,660	289,670	1920	277,712	48,478
1913.....	1,843,530	281,489	1921-1925.....		
			<b>Total</b> .....	<b>12,912,507</b>	<b>2,690,516</b>

**Exports and Imports.**—Exports of copper from Canada reached their peak during 1920 when these exports in various forms amounted in value to \$15,877,306. In 1925 the total exports were valued at \$14,685,932, an increase over the total for the previous year when export values stood at \$12,598,884. The two major export items were "copper, blister" valued at upwards of 6.5 million dollars, and "copper contained in ore, matte, regulus, etc.," which accounted for nearly 7 million dollars.

Imports into Canada of manufactured copper were valued at \$7,628,341, an increase of about 1.3 million dollars over the 1924 totals.

Table 48.—Imports into Canada and Exports of Copper, 1923, 1924 and 1925

Item	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>Imports—</b>						
Copper, in bars or rods, when imported by manufacturers of trolley, telegraph and telephone wires, electric wires and electric cables, for use only in the manufacture of such articles in their own factories.....	27,493,200	4,354,715	14,250,000	1,982,922	26,385,300	3,857,482
Copper, in bars or rods, in coil or otherwise, in lengths of not less than 6 feet, unmanufactured.....	1,463,800	284,484	757,000	143,322	482,500	95,563
Copper in blocks, pigs or ingots.....	8,167,041	1,215,349	12,083,131	1,591,958	7,934,779	1,138,740
Copper, old and scrap.....	3,046,400	432,362	1,896,200	246,632	4,174,100	572,656
Copper ore and concentrates.....	500	259			300	269
Copper, in strips, sheets or plates, not polished, planished or coated.....	389,300	551,166	1,861,900	380,431	1,971,300	400,229
Copper tubing in lengths of not less than 6 feet, and not polished, bent or otherwise manufactured.....	1,539,791	415,132	1,509,734	354,741	1,611,987	390,881
Copper wire, plain, tinned or plated.....	213,174	55,478	242,870	71,899	287,654	104,686
Copper wire cloth, or woven wire of copper.....		19,858		7,462		4,379
Copper wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....		390,566		296,221		487,779
Copper, all other manufactures of, n.o.p.....		429,327		420,611		415,625
Copper, precipitate of, crude.....						661
Anodes of nickel, zinc, copper, silver or gold.....		1,504		5,288		4,084
Copper, sub-acetate of, or verdigris, dry.....	3,782	860	683	201	4,083	812
Copper, sulphate of (blue vitriol).....	3,374,871	176,858	2,866,760	142,994	3,027,088	146,833
Copper bars for use in the manufacture of rods to be used in the manufacture of electrical conductors, and copper rods for such manufacture, units not exceeding the area of 7/8 gauge conductor.....			5,114,600	682,369	*	*
Copper, sulphate of, dehydrated, for agriculture or spraying purposes.....			243,088	11,027	156,808	7,662
<b>Total.....</b>		<b>8,327,919</b>		<b>6,338,078</b>		<b>7,628,341</b>
<b>Exports—</b>						
Copper, fine, contained in ore, matte, regulus, etc.....	34,548,000	3,607,031	49,545,800	5,346,489	60,527,500	6,969,960
Copper, blister.....	39,968,000	5,556,698	47,935,700	6,008,409	48,558,500	6,547,397
Copper, old and scrap.....	1,575,000	187,302	2,198,100	226,993	5,601,700	658,458
Copper, pig.....			2,405,800	284,780	1,100	126
Copper in bars, rods, strips, sheets, plates and tubing.....	826,000	104,028	170,400	39,500	156,300	45,599
Copper wire and cable.....		387,359		636,597		404,600
Copper m'fs., n.o.p.....		262,296		56,116		59,792
<b>Total.....</b>		<b>10,104,714</b>		<b>12,598,884</b>		<b>14,685,932</b>

\* Included in the first item.

**Prices.**—According to the *New York Engineering and Mining Journal*, the average price of copper for 1925 was 14.042 cents per pound as against 13.024 cents per pound in 1924. In January, the price stood at 14.709 cents, the highest during the year. It then receded to 13.252 cents in April, rose again to 14.490 cents in August and from then gradually declined to 13.866 cents in December.

Table 49.—Monthly Average Prices of Copper, New York and London, 1923, 1924 and 1925

(From the *Engineering and Mining Journal*)

Month	Electrolytic Copper					
	New York in cents per pound			London, £ Sterling per ton of 2,240 pounds		
	1923	1924	1925	1923	1924	1925
January.....	14.510	12.401	14.709	71.409	67.193	70.607
February.....	15.355	12.708	14.463	74.500	68.167	69.525
March.....	16.832	13.515	14.004	81.464	72.087	67.739
April.....	16.663	13.206	13.252	81.331	70.150	64.194
May.....	15.440	12.772	13.347	76.568	67.648	63.560
June.....	14.663	12.327	13.399	73.238	66.313	63.369
July.....	14.321	12.390	13.946	72.364	65.815	65.750
August.....	13.822	13.221	14.490	70.000	67.800	68.169
September.....	13.323	12.917	14.376	68.275	67.125	67.693
October.....	12.574	12.933	14.300	64.250	66.620	67.523
November.....	12.727	13.635	14.353	66.477	68.063	67.893
December.....	12.823	14.260	13.866	67.611	69.762	65.625
<b>Average.....</b>	<b>14.421</b>	<b>13.024</b>	<b>14.042</b>	<b>72.291</b>	<b>68.062</b>	<b>66.804</b>

Table 50.—\*Worlds' Production of Copper 1913 and 1921-1925

(From the *Year Book of the American Bureau of Metal Statistics*, 1925.)

(Short tons)

Country	1913	1921	1922	1923	1924	1925
<b>NORTH AMERICA—</b>						
United States.....	614,255	238,420	511,970	754,000	819,000	854,000
Mexico.....	58,185	13,576	29,842	60,538	57,139	59,123
Canada (a).....	38,460	22,632	25,300	40,230	50,072	56,239
Cuba.....	3,747	8,600	11,788	11,963	12,742	13,128
<b>Total, North America.....</b>	<b>714,647</b>	<b>283,228</b>	<b>578,900</b>	<b>866,731</b>	<b>938,953</b>	<b>982,490</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	4,077	10,674	10,154	11,744	8,200	7,500
Chile.....	46,574	65,299	142,830	201,042	208,964	209,654
Peru.....	30,609	36,689	40,133	48,684	38,798	41,180
Venezuela.....		800	1,075	1,175	1,230	1,500
<b>Total, South America.....</b>	<b>81,260</b>	<b>113,462</b>	<b>194,192</b>	<b>262,645</b>	<b>257,192</b>	<b>259,834</b>
<b>EUROPE—</b>						
Austria-Hungary (b).....	4,518	4,600	5,050	5,327	4,465	3,665
France.....		2,395	3,199	9,031	2,568	7,716
Germany.....	27,881	20,944	19,841	20,282	25,132	25,353
Jugo-Slavia.....		4,376	5,756	7,536	8,978	8,048
Norway.....	3,021	6,311	10,598	8,816	10,913	12,125
Russia.....	37,258		2,205	2,205	3,637	7,251
Spain and Portugal.....	39,683	36,596	40,234	57,115	61,839	63,933
Sweden.....	4,645	1,465	67	5,180	3,086	2,866
Serbia.....	7,053					
<b>Total, Europe.....</b>	<b>124,159</b>	<b>76,637</b>	<b>86,950</b>	<b>115,492</b>	<b>120,618</b>	<b>130,957</b>
<b>ASIA—</b>						
Japan.....	73,283	60,579	59,663	65,417	68,985	72,413
Other Asia.....		1,280	1,162	810	2,315	4,600
<b>Total, Asia.....</b>	<b>73,283</b>	<b>61,859</b>	<b>60,825</b>	<b>66,227</b>	<b>71,300</b>	<b>77,013</b>
<b>AUSTRALASIA.....</b>	<b>49,901</b>	<b>20,869</b>	<b>13,754</b>	<b>19,995</b>	<b>15,711</b>	<b>13,800</b>
<b>AFRICA.....</b>	<b>25,236</b>	<b>42,501</b>	<b>58,219</b>	<b>80,410</b>	<b>115,300</b>	<b>118,180</b>
<b>OTHER COUNTRIES.....</b>	<b>4,188</b>	<b>3,307</b>	<b>3,307</b>	<b>3,307</b>	<b>4,409</b>	<b>4,409</b>
<b>Grand Total.....</b>	<b>1,072,674</b>	<b>601,913</b>	<b>996,147</b>	<b>1,414,807</b>	<b>1,523,483</b>	<b>1,586,683</b>

(\*) So far as possible, these statistics are based on blister copper, referred to countries wherein ore originated.

(a) For Dominion Bureau of Statistics figures on Canada's production of copper, see Table 42.

(b) After 1918, Austria only.

## GOLD

The production of gold from all sources in Canada during the calendar year 1925 was 1,735,735 fine ounces which, at \$20.671834 per fine ounce amounted in value to \$35,880,826.

This marked an increase of 210,353 fine ounces or 13.7 per cent over the previous year and was the greatest production of gold recorded in any one year in the history of Canada. In 1900 when the Yukon gold production was at its maximum the output reached a total of 1,350,057 fine ounces.

Gold produced in 1925 was derived from (a) alluvial deposits, 60,998 ounces; (b) gold obtained from milling ores, 1,479,095 ounces; (c) gold obtained from Canadian copper and lead smelters, 46,442 ounces, and (d) gold estimated as recoverable from various ores and concentrates exported, 149,200 ounces. The corresponding figures for the year 1924 were: (a) 55,862 ounces; (b) 1,254,737 ounces; (c) 45,784 ounces; and (d) 168,999 ounces.

The production of gold by provinces was: Nova Scotia, 1,626 ounces or 0.1 per cent; Quebec, 1,602 ounces, or 0.1 per cent; Ontario, 1,461,039 ounces, or 84.16 per cent; Manitoba, 4,424 ounces, or 0.25 per cent; British Columbia, 219,227 ounces, or 12.63 per cent; and the Yukon, 47,817 ounces, or 2.76 per cent. Comparing the production by provinces in 1925 with the totals for the previous year, it is noted that Nova Scotia shows a slight increase; Quebec reported a greater production than in the previous year whilst Ontario production increased by over two hundred thousand ounces due to the increased tonnage handled by the gold mines of the Porcupine and Kirkland Lake area. There was an increased production in Manitoba. British Columbia reported a decrease owing to the shutting down of some of the mines at Rossland. The Yukon's production was some 13,000 ounces higher than in 1924.

Table 51.—Production of Gold from Canadian Sources, 1858-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
	\$			\$			\$	
1858.....	34,104	705,000	1881.....	63,524	1,313,153	1904.....	796,374	16,462,517
1859.....	78,129	1,615,072	1882.....	60,288	1,246,268	1905.....	684,951	14,159,195
1860.....	107,806	2,228,543	1883.....	53,853	1,113,246	1906.....	556,415	11,502,120
1861.....	128,973	2,666,118	1884.....	51,202	1,058,439	1907.....	405,517	8,382,780
1862.....	135,391	2,798,774	1885.....	55,575	1,148,829	1908.....	476,112	9,842,105
1863.....	202,498	4,186,011	1886.....	70,732	1,463,196	1909.....	453,865	9,382,230
1864.....	199,605	4,126,199	1887.....	57,460	1,187,804	1910.....	493,707	10,205,835
1865.....	192,898	3,987,562	1888.....	53,145	1,098,610	1911.....	473,159	9,781,077
1866.....	152,555	3,153,597	1889.....	62,653	1,295,159	1912.....	611,885	12,648,794
1867.....	145,775	3,013,431	1890.....	55,620	1,149,776	1913.....	802,973	16,598,923
1868.....	134,169	2,773,527	1891.....	45,018	930,614	1914.....	773,178	15,983,007
1869.....	102,720	2,123,405	1892.....	43,905	907,601	1915.....	918,056	18,977,901
1870.....	83,415	1,724,348	1893.....	47,243	976,603	1916.....	930,492	19,234,976
1871.....	105,187	2,174,412	1894.....	54,600	1,128,688	1917.....	738,831	15,272,992
1872.....	90,233	1,866,321	1895.....	100,798	2,083,674	1918.....	699,681	14,463,689
1873.....	74,346	1,536,871	1896.....	133,262	2,754,774	1919.....	766,764	15,850,423
1874.....	97,856	2,022,862	1897.....	291,557	6,027,016	1920.....	765,007	15,814,098
1875.....	130,300	2,693,533	1898.....	666,386	13,775,420	1921.....	926,329	19,148,920
1876.....	97,729	2,020,233	1899.....	1,028,529	21,261,584	1922.....	1,263,364	26,116,050
1877.....	94,304	1,949,444	1900.....	1,350,057	27,908,153	1923.....	1,233,341	25,495,421
1878.....	74,420	1,538,394	1901.....	1,167,216	24,128,503	1924.....	1,525,382	31,532,443
1879.....	76,547	1,582,358	1902.....	1,032,161	21,336,667	1925.....	1,735,735	35,880,826
1880.....	62,121	1,304,824	1903.....	911,559	18,843,590			
						<b>Total.....</b>	<b>28,089,642</b>	<b>580,664,528</b>

\*Calculated from the value \$1=0.048,375 ounces.

**Refined Metal.**—There were two refineries producing fine gold in Canada in 1925, namely, the Royal Mint, Ottawa, and the Consolidated Mining and Smelting Company of Canada, Limited, at Tadanac near Trail, B.C. From all ores treated in 1925, the latter company produced 18,441 fine ounces. This gold was recovered principally from the gold in copper ores but some was also recovered from silver-lead and dry ores. Small quantities of imported ores were also treated by this company.

Gold refined at the Royal Mint at Ottawa from the gold received from Ontario and British Columbia mines and the Yukon placers amounted to 120,570 fine ounces. Of this a small amount was recovered from scrap and crude gold from foreign sources. The total quantity of gold refined in Canada during 1925 was, therefore, 139,011 fine ounces.

Table 52.—Refined Gold Produced at Trail, B.C., 1904-1925\*

Year	Fine oz.	Year	Fine oz.
1904.....	4,336	1915.....	17,813
1905.....	8,602	1916.....	23,608
1906.....	9,993	1917.....	49,661
1907.....	10,395	1918.....	61,212
1908.....	15,346	1919.....	47,283
1909.....	18,241	1920.....	42,636
1910.....	13,298	1921.....	56,297
1911.....	15,270	1922.....	18,940
1912.....	12,118	1923.....	11,113
1913.....	11,977	1924.....	23,412
1914.....	11,088	1925.....	18,441

\*Includes some gold derived from imported ores and from occasional shipments from Ontario, Manitoba, Alberta, and the Yukon.

Table 53.—Receipts of Gold Bullion at the Royal Mint, Ottawa, Ont., 1908-1925

Year	From Canadian Sources		From Foreign Countries	
	Oz. gross	Value gold content	Oz. gross	Value gold content
		\$		\$
1908.....	219-19	3,823 03		
1909.....	5,741-43	94,864 81	38-25	673.98
1910.....	65,009-35	1,079,223 42		
1911.....	89,413-11	1,469,087 43	511-24	9,128 55
1912.....	104,825-29	1,676,371 78	742-79	12,451 33
1913.....	212,076-41	3,363,870 30	633-23	11,609 84
1914.....	29,762-24	471,042 90	4,750-19	98,062 84
1915.....	89,231-47	1,402,605 19	871,693-79	15,838,222-01
1916.....	49,195-39	780,074 19	6,687,758-41	121,513,083 93
1917.....	55,779-96	840,265 33	8,196,151-04	148,919,793 48
1918.....	302,785-96	4,982,743 81	3,728,224-05	67,739,887 68
1919.....	654,906-28	10,865,770 57	8,917-02	134,756 38
1920.....	724,083-34	11,530,413 82		
1921.....	1,054,277-01	16,914,211 58	53-00	826 87
1922.....	1,376,863-35	22,469,160 42	345-22	5,387 93
1923.....	779,466-92	12,682,163 78	295-53	4,935 16
1924.....	169,239-28	2,297,170 32	90-53	1,395 41
1925.....	167,375-64	2,505,264 66	192-35	2,900 59

Table 54.—Receipts by Provinces of Gold Bullion at the Royal Mint, Ottawa, Canada 1924 and 1925

Source	1924			1925		
	Gross weight	Precious metal content		Gross weight	Precious metal content	
		Fine gold	Fine silver		Fine gold	Fine silver
	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.
Nova Scotia.....	681-13	594-456	43-49	1,817-56	1,626-429	85-97
New Brunswick.....	2-16	1-392	0-43			
Quebec.....				8-61	8-596	
Ontario.....	59,227-40	28,052-613	4,693-12	139,130-21	105,888-118	19,129-98
Manitoba.....	985-34	826-239	103-38	5,448-61	4,651-355	576-81
Saskatchewan.....				46-49	37-578	5-20
Alberta.....	6-88	5-219	0-69			
British Columbia.....	5-74	5-029	0-51	2-09	1-553	0-17
Dominion of Canada Assay Office, Vancouver*.....	90,865-54	74,785-025	11,493-15			
Yukon.....						
Jewellery and scrap, various sources.....	17,465-09	6,855-644	2,653-30	20,922-07	8,217-515	3,203-42
Foreign.....	90-53	67-503	20-10	192-35	138-863	43-75
<b>Total.....</b>	<b>169,329-81</b>	<b>111,193-120</b>	<b>19,008-17</b>	<b>167,567-99</b>	<b>120,570-007</b>	<b>23,045-30</b>

\*Gold from the Assay Office was shipped to the United States in 1925 instead of to the Royal Mint, Ottawa, as in former years.

Table 55.—Receipt at Dominion Assay Office, Vancouver, B.C., 1908-1925

Year	Weight before melting	Weight after melting	Net value	Year	Weight before melting	Weight after melting	Net value
	Ounces	Ounces	\$		Ounces	Ounces	\$
1908 (a).....	90,175.48	89,117.76	1,478,894.00	1917.....	191,626.04	187,884.48	3,257,220.71
1909.....	48,478.58	47,576.27	739,267.94	1918.....	241,762.77	238,245.07	4,099,595.80
1910.....	46,064.31	45,228.92	746,101.92	1919.....	209,026.14	205,947.57	3,547,524.93
1911.....	39,784.70	39,069.31	647,416.38	1920.....	150,869.17	147,718.25	2,499,174.41
1912.....	59,068.82	57,951.98	974,077.14	1921.....	163,070.56	160,803.48	2,834,499.61
1913 (b).....	111,479.94	109,920.49	1,448,625.37	1922.....	129,891.63	125,758.41	2,105,989.64
1914.....	166,148.83	163,523.61	2,029,251.31	1923.....	129,043.63	124,546.48	2,051,369.65
1915.....	183,924.49	179,751.68	2,736,302.31	1924.....	114,041.96	107,569.15	1,850,373.74
1916.....	180,292.83	175,393.10	2,828,239.65	1925.....	140,691.78	123,202.39	2,065,217.00

(a) For 9 months only. (b) The removal of the assay charge in January 1913, accounts for the large increase.

Table 56.—Receipts of Gold Bullion and Dental and Jewellery Scrap Received at Dominion of Canada Assay Office, Vancouver, B.C., 1925

	No. of deposits	Weight before melting and assaying	Weight after melting and assaying	Net value of deposits
		Troy ounces	Troy ounces	\$
<b>BAR, NUGGET AND DUST, AMALGAM, ETC.—</b>				
British Columbia.....	571	71,917.30	56,461.03	1,026,873.97
Yukon Territory.....	422	61,096.43	59,784.75	977,624.02
Alaska.....	3	15.49	13.86	245.95
Siberia.....	3	458.96	458.70	8,648.82
<b>DENTAL AND JEWELLERY SCRAP—</b>				
British Columbia.....	525	6,090.10	5,540.00	40,393.14
Alberta.....	120	877.04	754.30	9,117.31
Saskatchewan.....	34	234.28	187.66	2,281.36
Manitoba.....	1	2.18	2.09	32.59
<b>Total.....</b>	<b>1,679</b>	<b>140,691.78</b>	<b>123,202.39</b>	<b>2,065,217.16</b>

## NOVA SCOTIA

Nova Scotia's gold production has been derived almost entirely from quartz ores but gold also occurs in deposits of arsenical pyrites which are sometimes mined for the recovery of arsenic and gold. Production from all sources in 1925 amounted to 1,626 fine ounces. Gold mining in Nova Scotia reached its peak in 1902 when the output amounted to 30,348 fine ounces. Due partly to exhaustion of the mines and partly to the high cost of supplies and labour, production has steadily declined in recent years, but with the possibility of cheaper power and improved methods of mining and treating the ore, Nova Scotia may again be recognized as one of Canada's gold-producing provinces.

Table 57.—Production of Gold from Nova Scotia Ores, 1862-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$
1862.....	6,863	141,871	1894.....	18,834	389,338
1863.....	13,180	272,448	1895.....	21,919	453,119
1864.....	18,883	390,349	1896.....	23,876	493,568
1865.....	24,011	496,357	1897.....	27,195	562,165
1866.....	23,776	491,491	1898.....	26,054	538,590
1867.....	25,763	532,563	1899.....	29,876	617,604
1868.....	19,377	400,555	1900.....	28,955	598,553
1869.....	16,855	348,427	1901.....	26,459	546,963
1870.....	18,740	387,302	1902.....	30,348	627,357
1871.....	18,139	374,972	1903.....	25,533	527,806
1872.....	12,352	255,349	1904.....	10,362	214,209
1873.....	11,180	231,122	1905.....	13,707	283,353
1874.....	8,623	178,244	1906.....	12,223	252,676
1875.....	10,576	218,629	1907.....	13,675	282,686
1876.....	11,300	233,585	1908.....	11,842	244,799
1877.....	15,925	329,205	1909.....	10,193	210,711
1878.....	11,864	245,253	1910.....	7,928	163,891
1879.....	12,980	268,328	1911.....	7,781	160,854
1880.....	12,472	257,823	1912.....	4,385	90,638
1881.....	10,147	209,755	1913.....	2,174	44,935
1882.....	13,307	275,090	1914.....	2,904	60,031
1883.....	14,571	301,207	1915.....	6,636	137,180
1884.....	15,168	313,554	1916.....	4,562	94,305
1885.....	20,945	432,971	1917.....	2,210	45,685
1886.....	22,038	455,564	1918.....	1,176	24,310
1887.....	20,009	413,631	1919.....	850	17,571
1888.....	21,137	436,939	1920.....	690	14,263
1889.....	24,673	510,029	1921.....	439	9,075
1890.....	22,978	474,990	1922.....	1,042	21,540
1891.....	21,841	451,503	1923.....	655	13,540
1892.....	18,865	389,965	1924.....	1,047	21,643
1893.....	18,436	381,095	1925.....	1,626	33,612
<b>Total.....</b>			<b>914,130 18,896,826</b>		

\*Calculated from the value: one dollar=0.048375 ounces.

## QUEBEC

Gold produced from ores mined in the province of Quebec during 1925 totalled 1,602 fine ounces. This was the amount of recoverable gold in silver-lead-zinc ores exported to the United States for treatment. To the end of the year 1925, Quebec was credited with having produced 29,986 fine ounces of gold valued at \$619,828.

Table 58.—Production of Gold from Quebec Ores, 1877-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1877.....	583	12,057	1894.....	1,412	29,196	1911.....	613	12,672
1878.....	868	17,937	1895.....	62	1,281	1912.....	642	13,270
1879.....	1,160	23,972	1896.....	145	3,000	1913.....	701	14,491
1880.....	1,605	33,174	1897.....	44	900	1914.....	1,292	26,708
1881.....	2,741	56,661	1898.....	295	6,089	1915.....	1,099	22,720
1882.....	827	17,093	1899.....	238	4,916	1916.....	1,034	21,375
1883.....	860	17,787	1900.....			1917.....	1,511	31,235
1884.....	422	8,720	1901.....	145	3,000	1918.....	1,939	40,083
1885.....	103	2,120	1902.....	391	8,073	1919.....	1,470	30,388
1886.....	193	3,981	1903.....	180	3,712	1920.....	955	19,742
1887.....	78	1,604	1904.....	140	2,900	1921.....	635	13,127
1888.....	181	3,746	1905.....	191	3,940	1922.....		
1889.....	58	1,207	1906.....	165	3,412	1923.....	667	13,788
1890.....	65	1,350	1907.....			1924.....	883	18,253
1891.....	87	1,800	1908.....			1925.....	1,602	33,116
1892.....	628	12,987	1909.....	193	3,990	<b>Total.....</b>		
1893.....	759	15,696	1910.....	124	2,565	<b>29,986 619,828</b>		

\*Calculated from the value: one dollar=0.048375 ounces.

## ONTARIO

Ontario's gold production in 1925 exceeded the total for any previous year. For the third time, production rose above one million ounces, the other years being 1922 and 1924. In 1923, the output was slightly less. From present indications there is little doubt that the record established in 1925 will be exceeded in the years to come. Since 1914, Ontario has become by far the largest producer of gold among the provinces of the Dominion; this remarkable increase was brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The falling-off in production during 1917-1918 was due to the abnormal conditions created by the war; high costs both of materials and labour restricted development programs; lack of adequate transportation facilities at reasonable rates and other factors hampered production. Gold was paid for in New York funds, because of government limitations on export, and the exchange premium received by the producers proved an important feature of gold-marketing from the close of the war until the end of 1921. The gradual recovery in the value of the Canadian dollar in the United States exchanges has greatly reduced the premiums paid to the Canadian gold mine operators. In 1920, the United States dollar had an average exchange value in Canadian funds of \$1.12270; the average exchange value in 1923 was \$1.0197, and in 1924 it stood at \$1.0131, while in 1925 it was \$1.003.

Table 59.—Production of Gold from Ontario Ores, 1887-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1887.....	327	6,760	1900.....	14,391	297,495	1913.....	219,801	4,543,690
1888.....			1901.....	11,844	244,837	1914.....	268,264	5,545,599
1889.....			1902.....	11,118	229,828	1915.....	406,577	8,404,693
1890.....			1903.....	9,096	188,036	1916.....	492,481	10,180,485
1891.....	97	2,000	1904.....	1,935	40,000	1917.....	423,261	8,749,581
1892.....	344	7,118	1905.....	4,402	91,000	1918.....	411,976	8,516,299
1893.....	708	14,637	1906.....	3,202	66,193	1919.....	505,739	10,454,553
1894.....	1,917	39,624	1907.....	3,212	66,398	1920.....	564,995	11,679,483
1895.....	3,015	62,320	1908.....	3,212	66,398	1921.....	708,213	14,640,062
1896.....	5,563	115,000	1909.....	1,569	32,425	1922.....	1,000,340	20,678,862
1897.....	9,157	189,294	1910.....	3,089	63,849	1923.....	971,704	20,086,904
1898.....	12,863	265,889	1911.....	2,062	42,625	1924.....	1,241,728	25,668,795
1899.....	20,394	421,591	1912.....	86,523	1,788,596	1925.....	1,461,039	30,202,357
						<b>Total.....</b>	<b>8,886,158</b>	<b>183,693,178</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## MANITOBA

Manitoba mines produced 4,424 fine ounces of gold during 1925, having a value of \$91,452, as against 1,180 fine ounces in 1924. During 1917 and 1918 shipments of gold-bearing copper ores were made from The Pas district in northern Manitoba to Trail, but because of the drop in the price of copper, and also because of inadequate transportation facilities in the copper-mining district of the province, there has been no production of gold from this source in recent years from 1918 until 1924. There is much of interest in the gold area stretching eastward from lake Winnipeg along Wanipigou and Manigotagan rivers to the Ontario boundary. A considerable amount of prospecting has been done in this district and the indications are that Manitoba will produce gold in quantity in the near future.

Table 60.—Production of Gold from Manitoba Ores 1917-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$
1917.....	440	9,095	1922.....	156	3,225
1918.....	1,626	39,814	1923.....	31	641
1919.....	724	14,966	1924.....	1,180	24,393
1920.....	781	16,145	1925.....	4,424	91,452
1921.....	207	4,279	<b>Total.....</b>	<b>9,869</b>	<b>204,010</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## SASKATCHEWAN AND ALBERTA

No production of gold was reported from these two provinces in 1925. Occasionally, small quantities of gold have been recovered by prospectors in Alberta from the gravels of the Saskatchewan river. To date, the grand total of gold produced by Alberta has amounted to 15,109 fine ounces valued at \$312,333.

Table 61.—Production of Gold from Alberta, 1887-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1887.....	102	2,100	1900.....	242	5,000	1913.....		
1888.....	58	1,200	1901.....	726	15,000	1914.....	48	992
1889.....	967	20,000	1902.....	484	10,000	1915.....	195	4,026
1890.....	193	4,000	1903.....	48	1,000	1916.....	82	1,695
1891.....	266	5,500	1904.....	24	500	1917.....		
1892.....	508	10,500	1905.....	121	2,500	1918.....	27	558
1893.....	466	9,640	1906.....	39	800	1919.....	24	500
1894.....	726	15,000	1907.....	33	675	1920.....		
1895.....	2,419	50,000	1908.....	50	1,037	1921.....	49	1,013
1896.....	2,661	55,000	1909.....	25	525	1922.....		
1897.....	2,419	50,000	1910.....	89	1,850	1923.....		
1898.....	1,209	25,000	1911.....	10	207	1924.....		
1899.....	726	15,000	1912.....	73	1,509	1925.....		
<b>Total.....</b>							<b>15,109</b>	<b>312,333</b>

\*Calculated from the value: one dollar = 0.048,375 ounces.

## BRITISH COLUMBIA

The production of gold in British Columbia during 1925 totalled 219,227 fine ounces valued at \$4,531,824 as against 245,719 fine ounces valued at \$5,079,462 in 1924. This was a decrease of 11 per cent and was due largely to the fact that the mines of the Rossland district curtailed operations considerably during 1925. Production by the Granby smelter was larger than in 1924. A new dredge was built and sent in to the Cariboo district in 1924 and in 1925 it was successfully operated from May until December. Production in 1925 included (a) alluvial gold 13,181 fine ounces or 6.02 per cent of the total for the province; (b) bullion from milling ores, 19,407 fine ounces or 8.85 per cent; (c) smelter recoveries 42,426 fine ounces or 19.37 per cent; and (d) the estimated recoveries from ores and concentrates exported 144,213 fine ounces or 65.76 per cent. The corresponding quantities for 1924 were (a) 21,037 fine ounces or 8.56 per cent; (b) 15,361 fine ounces or 6.25 per cent; (c) 41,657 fine ounces or 16.95 per cent and (d) 167,664 fine ounces or 68.24 per cent.

In the statistics reported by the Provincial Bureau of Mines for 1925 the quantity given for gold production is based on the metal content of ores shipped, and is somewhat higher than the records of smelter recoveries used by Dominion Bureau of Statistics.

Table 62.—Production of Gold from British Columbia Ores, 1858-1925

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1858.....	34,104	705,000	1881.....	50,636	1,046,737	1904.....	275,975	5,704,908
1859.....	78,129	1,615,072	1882.....	46,154	954,085	1905.....	285,529	5,902,402
1860.....	107,803	2,228,543	1883.....	38,422	794,252	1906.....	269,886	5,579,039
1861.....	128,973	2,666,118	1884.....	35,612	736,165	1907.....	286,216	4,833,020
1862.....	128,973	2,666,903	1885.....	34,527	713,738	1908.....	286,858	5,929,880
1863.....	159,318	3,913,593	1886.....	43,714	903,651	1909.....	250,320	5,174,579
1864.....	180,722	3,735,850	1887.....	33,555	693,709	1910.....	261,386	5,403,318
1865.....	168,887	3,491,205	1888.....	29,834	616,731	1911.....	238,496	4,930,145
1866.....	128,779	2,662,101	1889.....	28,489	588,023	1912.....	251,815	5,205,485
1867.....	120,012	2,480,868	1890.....	23,918	494,436	1913.....	297,459	6,149,027
1868.....	114,792	2,372,972	1891.....	20,792	420,811	1914.....	252,730	5,224,393
1869.....	85,865	1,774,978	1892.....	19,327	399,525	1915.....	273,376	5,651,184
1870.....	64,675	1,336,956	1893.....	18,360	379,535	1916.....	219,633	4,540,216
1871.....	87,048	1,799,440	1894.....	25,664	530,530	1917.....	133,742	2,764,693
1872.....	77,931	1,610,972	1895.....	61,289	1,266,954	1918.....	180,163	3,724,300
1873.....	63,166	1,305,749	1896.....	86,504	1,788,206	1919.....	167,252	3,457,406
1874.....	89,233	1,844,618	1897.....	131,805	2,724,657	1920.....	124,808	2,580,010
1875.....	119,724	2,474,904	1898.....	142,215	2,939,852	1921.....	150,792	3,117,147
1876.....	86,429	1,786,648	1899.....	203,295	4,202,473	1922.....	207,370	4,286,718
1877.....	77,796	1,603,182	1900.....	228,916	4,732,105	1923.....	200,140	4,137,261
1878.....	61,658	1,275,204	1901.....	257,292	5,318,703	1924.....	245,719	5,079,462
1879.....	62,407	1,290,058	1902.....	288,383	5,961,409	1925.....	219,227	4,531,824
1880.....	49,044	1,013,827	1903.....	284,108	5,873,036			
<b>Total.....</b>							<b>9,466,762</b>	<b>195,695,376</b>

\* Calculated from the value: one dollar = 0.048375 ounces.

Table 63.—Production of Gold in British Columbia by Districts, 1924 and 1925

(From Annual Report of the Minister of Mines for British Columbia)

District and Divisions	1924				1925			
	Gold placer		Gold lode		Gold placer		Gold lode	
	Ounces	Value	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$		\$
Northwestern District (No. 1).—								
Atlin.....	8,647	147,000	5	103	2,896	49,229	1,878	38,822
Stikine.....					41	700		
Liard.....	196	3,325			441	7,500		
Nass River.....			6,323	130,696			7,484	154,708
Portland Canal.....			139,462	2,882,680			118,469	2,448,967
Skeena.....			34,673	716,691			35,086	725,291
Queen Charlotte.....					4	70		
Bella Coola.....								
Northeastern District (No. 2).—								
Cariboo.....	3,530	60,000			8,919	151,627		
Quesnel.....	10,558	180,000			2,995	50,911		
Omineca.....	294	5,000	329	6,800	269	4,560	121	2,501
Peace River.....	294	5,000			177	3,000		
Central District (No. 3).—								
Nicola.....			2	41				
Vernon.....					4	60		
Yale.....	59	1,000	9	186	29	500	37	765
Ashcroft.....	29	500	2	41				
Kamloops.....	29	500	125	2,584	78	1,320		
Lillooet.....	249	4,225			83	1,415	3,531	72,992
Clinton.....	206	3,500			95	1,620		
Southern District (No. 4).—								
Grand Forks.....			302	6,242				
Greenwood.....			168	3,473			53	1,096
Osoyoos.....			19,119	395,435			19,426	401,570
Similkameen.....	235	4,000			146	2,482	242	5,002
Eastern District (No. 5).—								
Fort Steele.....	305	5,200			262	4,449		
Windermere.....								
Golden.....					2	40		
Ainsworth.....			24	496			16	331
Slocan.....			365	7,545			310	6,408
Slocan City.....								
Nelson.....			84	1,736			723	14,946
Arrow Lake.....			14	2 90				
Trail Creek.....			42,620	880,956			14,112	291,720
Revelstoke.....	44	750			29	500		
Trout Lake.....	15	250						
Lardeau.....								
Southwestern District (No. 6).—								
Nanaimo.....								
Alberni.....								
Clayoquot.....								
Quatsino.....	18	300						
Victoria.....	12	200			6	109		
New Westminster.....								
Vancouver.....			4,090	84,540			8,231	170,150
<b>Totals.....</b>	<b>24,750</b>	<b>420,750</b>	<b>247,716</b>	<b>5,120,535</b>	<b>16,476</b>	<b>280,092</b>	<b>209,719</b>	<b>4,335,269</b>

## YUKON

Yukon's gold production in 1925, derived from alluvial sands of the Dawson and White Horse districts showed an increase over 1924. The output for 1925 amounted to 47,817 fine ounces valued at \$988,465 as against 34,825 fine ounces valued at \$719,897 in 1924. Royalty was paid on 59,771.47 crude ounces which included 47,817 fine ounces of gold valued at \$988,465 and 10,759 fine ounces of silver valued at \$7,431, the total value being \$995,896. For 1924 the corresponding figures were 43,530.79 crude ounces containing 34,825 fine ounces of gold valued at \$719,897 and 7,853 fine ounces of silver valued at \$5,244, the total value being \$725,141..

The following table shows statistics of gold produced in the Yukon during the past 40 years. Between the years 1896 and 1906 the figures were based upon receipts of gold at United States mints and receiving offices, credited to the Canadian Yukon.

Since 1902 a royalty of two and one-half per cent of all gold produced has been collected by the Canadian Government which places a nominal value of \$15 on each crude ounce recovered. The statistics shown for these years are based on the returns supplied by the *Mining Lands and Yukon Branch* of the Department of the Interior, and the fine gold is

estimated as 80 per cent of all crude gold, fine silver as 18 per cent, and the remaining 2 per cent is regarded as worthless base metal.

The Vancouver Assay Office, operated by the Department of Mines, Ottawa, receives and melts a considerable portion of the placer gold from the Yukon. During 1925 there was deposited from this Territory 61,096.43 troy ounces of gold bullion which weighed after melting 59,784.75 troy ounces and was valued, after all charges had been deducted, at \$977,624 or \$16 per ounce as against 44,365.96 ounces valued at \$717,156 or \$16.17 per ounce in 1924.

**Table 64.—Production of Gold from the Yukon, 1885-1925**

Year	Fine ounces (*)	Value	Year	Fine ounces (*)	Value	Year	Fine ounces (*)	Value
		\$			\$			\$
1885.....	4,837	100,000	1899.....	774,000	16,000,000	1913.....	282,838	5,846,780
1886.....			1900.....	1,077,553	22,275,000	1914.....	247,940	5,125,374
1887.....	3,386	70,000	1901.....	870,750	18,000,000	1915.....	230,173	4,758,098
1888.....	1,935	40,000	1902.....	701,437	14,500,000	1916.....	212,700	4,396,900
1889.....	8,466	175,000	1903.....	592,594	12,250,000	1917.....	177,667	3,672,703
1890.....	8,466	175,000	1904.....	507,938	10,500,000	1918.....	102,474	2,118,325
1891.....	1,953	40,000	1905.....	381,001	7,876,000	1919.....	90,705	1,875,039
1892.....	4,233	87,500	1906.....	270,900	5,600,000	1920.....	72,778	1,504,455
1893.....	8,514	176,000	1907.....	152,381	3,150,000	1921.....	65,994	1,364,217
1894.....	6,047	125,000	1908.....	174,150	3,600,000	1922.....	54,456	1,125,705
1895.....	12,094	250,000	1909.....	191,565	3,960,000	1923.....	60,144	1,243,287
1896.....	14,513	300,000	1910 (a).....	221,091	4,570,362	1924.....	34,825	719,897
1897.....	120,937	2,500,000	1911.....	224,197	4,634,574	1925.....	47,817	988,465
1898.....	483,750	10,000,000	1912.....	268,447	5,549,296			
						<b>Total.....</b>	<b>8,767,646</b>	<b>181,242.9</b>

(\*) Calculated from the value: one dollar=0.048375 ounces.

(a) Including a small production from lode mines, from 1910 to 1923 inclusive.

**Table 65.—Receipts from the Yukon, at the Dominion Government Assay Office, Vancouver, B.C., 1908-1925**

Year	Weight before melting	Net value	Average value	Year	Weight before melting	Net value	Average value
	Ounces	\$	\$		Ounces	\$	\$
1908 (a).....	60,132.00	1,000,296	16.62	1917.....	79,532.35	1,262,207	15.87
1909.....	5,003.12	83,871	16.75	1918.....	121,310.37	1,921,198	15.84
1910.....	3,594.87	62,904	17.27	1919.....	111,138.65	1,813,883	16.32
1911.....	2,073.61	34,944	16.88	1920.....	74,456.01	1,206,579	16.21
1912.....	2,211.88	36,481	16.41	1921.....	82,219.92	1,340,225	16.30
1913 (b).....	15,235.29	247,189	16.22	1922.....	69,161.19	1,126,702	16.29
1914.....	56,564.83	915,914	16.21	1923.....	73,360.82	1,201,133	16.37
1915.....	87,040.87	1,418,497	16.28	1924.....	44,365.96	717,156	16.17
1916.....	95,005.82	1,525,724	16.06	1925.....	61,096.43	977,624	16.00

(a) For nine months only.

(b) The removal in 1913 of the assay charge accounts for the great increase.

**Table 66.—Production of Crude Gold in the Yukon by Months, 1923, 1924 and 1925**  
(Gross weight of dust, nuggets, and bullion in ounces)

Month	1923	1924	1925
January.....	969.26	1,381.51	1,483.60
February.....	1,040.36	52.07	999.38
March.....	2.39	1,468.51	30.50
April.....		100.10	0.00
May.....		129.66	0.00
June.....	10,352.94	8,651.62	4,988.62
July.....	9,176.99	6,831.51	10,052.62
August.....	9,953.42	6,225.10	5,051.47
September.....	11,924.54	4,971.71	27,166.78
October.....	24,881.87	9,168.36	7,628.72
November.....	4,794.17	3,080.63	413.70
December.....	1,771.87	1,470.01	1,958.08
<b>Total.....</b>	<b>74,867.81</b>	<b>43,530.79</b>	<b>59,771.47</b>

From 1898 to March 31, 1926, royalties to the extent of \$4,900,955.02 were collected on the gold production of the Yukon. The yearly amounts collected, as well as the annual production of gold, as ascertained by the *Department of the Interior*, are shown below. The difference between these figures and those shown in the table of annual production, which are based on mint receipts of Yukon gold, is probably due to three factors: (1) the fixing of the value of the gold for royalty purposes at \$15 per ounce, (2) the probability that, in the earlier years of royalty collection, considerable quantities of gold dust left the camps unrecorded and escaped royalty payments, and (3) the fact that in the last few years, there has been a small production from lode mines.

Table 67.—Gold Production in the Yukon and the Royalty Collected, 1898-1926

----- (Supplied by Controller H. H. Rowatt, of the Mining Lands Branch of the Department of the Interior.)

Fiscal year		Total gold production	Total exemption	Royalty collected on	Royalty paid
		\$	\$	\$	\$
Ending June, 1898	1898	3,072,773	339,845	2,732,928	273,292.82
Ending June, 1899	1899	7,582,283	1,699,657	5,882,626	588,262.37
Ending June, 1900	1900	9,809,464	2,501,744	7,307,720	730,771.99
Ending June, 1901	1901	9,162,082	1,927,666	7,234,416	592,660.98
Ending June, 1902	1902	9,566,340	1,199,144	8,367,226	331,436.79
Ending June, 1903	1903	12,113,015		12,113,015	302,893.48
Ending June, 1904	1904	10,790,663		10,790,663	372,217.96
Ending June, 1905	1905	8,222,054		8,222,054	206,760.87
Ending June, 1906	1906	6,540,007		6,540,007	163,963.25
Ending March, 1907	1907	2,304,791		2,304,791	82,622.42
Ending March, 1908	1908	2,820,162		2,820,162	70,504.65
Ending March, 1909	1909	3,260,282		3,260,282	81,507.07
Ending March, 1910	1910	3,594,251		3,594,251	89,844.10
Ending March, 1911	1911	4,126,728		4,126,728	103,168.19
Ending March, 1912	1912	4,024,237		4,024,237	100,606.29
Ending March, 1913	1913	5,018,412		5,018,412	125,460.52
Ending March, 1914	1914	5,301,508		5,301,508	132,537.69
Ending March, 1915	1915	4,649,634		4,649,634	116,241.04
Ending March, 1916	1916	4,458,278		4,458,278	111,457.19
Ending March, 1917	1917	3,960,207		3,960,207	99,007.92
Ending March, 1918	1918	3,266,019		3,266,019	81,650.55
Ending March, 1919	1919	1,947,082		1,947,082	48,677.07
Ending March, 1920	1920	1,660,450		1,660,450	41,501.12
Ending March, 1921	1921	1,246,486		1,246,486	31,273.76
Ending March, 1922	1922	1,230,987		1,230,987	30,774.68
Ending March, 1923	1923	1,032,762		1,032,762	25,819.04
Ending March, 1924	1924	1,136,368		1,136,368	28,409.23
Ending March, 1925	1925	625,459		625,459	15,636.48
Ending March, 1926	1926	879,819		879,819	21,995.50
<b>Total</b>		<b>134,402,603</b>		<b>126,734,577</b>	<b>4,900,955.02</b>

Table 68.—Imports into Canada and Exports of Gold, 1923, 1924 and 1925

	1923	1924	1925
<b>IMPORTS—</b>			
Gold—	\$	\$	\$
Fringe	42,283	40,468	27,215
Coin and bullion—			
Gold coin		3,315,228	49,477,383
Gold bullion		924,644	1,031,597
Manufactures of gold and silver—			
Leaf	81,252	69,495	76,394
Sweepings	4,849	5,508	2,282
Manufactures, n.o.p.	125,582	142,008	147,839
Electroplated ware	509,131	604,500	707,726
<b>EXPORTS—</b>			
Gold-bearing quartz, dust, nuggets and bullion obtained direct from mining operations	12,541,745	28,358,449	31,432,657
Gold bullion		6,988,633	333,090

Table 69.—World's Production of Gold, (a) 1913 and 1921-1925

(From the Year Book of the American Bureau of Metal Statistics, 1925)

(Fine ounces)

	1913	1921	1922	1923	1924	1925
<b>NORTH AMERICA—</b>						
United States.....	4,299,784	2,422,006	2,363,075	2,502,632	2,528,900	2,376,514
Canada.....	802,973	926,329	1,263,364	1,233,341	1,525,382	†1,740,386
Mexico.....	829,783	684,634	748,291	776,808	792,401	755,000
<b>Total North America.....</b>	<b>5,932,540</b>	<b>4,032,969</b>	<b>4,374,730</b>	<b>4,512,781</b>	<b>4,846,683</b>	<b>4,871,900</b>
<b>Central America and West Indies.....</b>	<b>131,661</b>	<b>120,937</b>	<b>120,937</b>	<b>96,750</b>	<b>87,075</b>	<b>75,000</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	8,467	290	407	407	964	
Chili.....		45,139	79,828	105,549	112,011	
Brazil.....	109,072	134,482	146,668	144,675	135,000	
Colombia.....	143,757	290,250	275,737	275,738	266,063	
Ecuador.....	19,665	36,259	42,456	42,456	38,700	
Peru.....	23,813	77,385	81,436	120,372	120,372	
Guiana—British.....	65,475	12,828	10,876	7,267	7,187	
Dutch.....	22,757	11,285	11,992	12,731	10,352	
Venezuela.....	147,571	48,375	48,772	44,624	63,496	
Other countries.....	21,517	30,253	17,361	17,361	17,361	
	1,572	3,967	3,967	3,881	3,882	
<b>Total South America.....</b>	<b>563,666</b>	<b>690,513</b>	<b>719,500</b>	<b>775,056</b>	<b>775,388</b>	<b>*780,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	105,425	161	546	739	1,961	
Czecho-Slovakia.....		11,413	8,294	3,344	9,002	
France.....	102,912	8,906	16,493	16,943	19,804	
Great Britain.....	864					
Roumania.....		41,409	42,984	48,225	42,149	
Russia and Siberia.....	1,282,313	43,177	146,700	250,673	572,877	
Other countries.....	24,290	8,231	9,744	11,351	26,849	
<b>Total Europe.....</b>	<b>1,515,804</b>	<b>113,297</b>	<b>224,761</b>	<b>331,275</b>	<b>673,642</b>	<b>*1,000,000</b>
<b>AUSTRALASIA—</b>						
New South Wales.....	149,657	51,173	25,222	18,833	18,685	19,422
Queensland.....	265,735	40,376	80,584	88,726	98,841	44,332
South Australia.....	2,656	2,660	1,000	650	787	780
Victoria.....	434,932	104,512	106,872	95,403	67,167	47,296
West Australia.....	1,314,043	553,731	538,245	504,511	485,118	440,818
New Zealand.....	343,595	135,720	144,117	164,408	129,900	*125,000
Tasmania.....	33,400	5,340	3,431	3,684	4,625	3,524
Other countries.....	21,392	9,779	12,260	12,741	12,224	*10,000
<b>Total Australasia.....</b>	<b>2,569,311</b>	<b>903,291</b>	<b>911,731</b>	<b>889,256</b>	<b>817,347</b>	<b>691,172</b>
<b>ASIA—</b>						
British India.....	589,109	432,723	438,015	383,697	396,349	392,400
China.....	176,999	100,000	100,000	89,500	107,300	*100,000
Chosen (Korea).....	173,306	130,893	127,892	121,433	120,000	*125,000
British East Indies.....	65,402	24,188	29,025	29,025	24,187	*24,000
Dutch East Indies.....	163,852	94,168	104,295	115,547	124,388	*124,500
Formosa.....	39,406	28,455	21,958	21,958	8,503	*8,500
Japan.....	174,846	237,106	241,993	247,266	244,340	271,000
Other countries.....	24,596	30,637	20,924	16,405	22,023	*22,000
<b>Total Asia.....</b>	<b>1,407,516</b>	<b>1,078,170</b>	<b>1,084,102</b>	<b>1,024,831</b>	<b>1,047,090</b>	<b>1,067,400</b>
<b>AFRICA—</b>						
Belgian Congo.....	44,334	65,715	68,251	91,306	118,119	109,500
Madagascar.....	60,769	14,660	18,582	16,686	10,802	*11,000
Rhodesia.....	690,541	586,903	655,296	649,082	628,974	582,752
British West Africa.....	384,836	203,606	213,395	200,565	233,910	*235,000
Transvaal, Cape Colony and Natal.....	8,798,713	8,128,722	7,009,858	9,149,073	9,575,040	9,599,702
Other countries.....	45,623	44,984	43,587	49,810	38,362	*38,500
<b>Total Africa.....</b>	<b>10,024,816</b>	<b>9,044,595</b>	<b>8,009,069</b>	<b>10,156,522</b>	<b>10,605,207</b>	<b>10,576,454</b>
<b>Grand Total.....</b>	<b>22,145,314</b>	<b>15,983,772</b>	<b>15,444,830</b>	<b>17,786,471</b>	<b>18,852,432</b>	<b>19,061,926</b>

(a) 1913-1922, as reported by the Director of the Mint, with some changes. 1924, as compiled by American Bureau of Metal Statistics, conjectural figures (\*) based on the 1924 outputs being inserted where necessary. Production of the Philippine Islands is included with the United States.

†Preliminary Dominion Bureau of Statistics's figures.

## IRON ORE

## CANADA

Shipments of iron ore totalling 3,978 tons and having a value of \$11,934, were made from Canadian mines during 1925, as compared with 1,480 tons valued at \$3,936 shipped during 1924. This includes 72 tons valued at \$165 used in Canadian blast furnaces for the manufacture of pig-iron, which production is given under the item pig-iron from Canadian ores. The production for 1925 consisted of shipments from the Baie St. Paul Titanic Iron Co. to Niagara Falls, N.Y.

Nova Scotia did not produce any iron ore, but during the year the British Empire Steel Corporation brought in from their mines at Wabana, Newfoundland, 384,795 tons valued at \$1,188,742. This company also exported to Europe 883,056 tons valued at \$3,746,823 making the total of shipments for the year, 1,267,851 tons, valued at \$4,935,565. Shipments from Newfoundland in 1924 amounted to 1,094,570 tons valued at \$2,405,735, of which 174,602 tons worth \$371,622 were shipped to Nova Scotia and the balance to Europe.

Table 70.—Shipments of Iron Ore from Canadian Mines, by Provinces, 1886-1925

(Short tons)

Year	Nova Scotia	New Brunswick	Quebec	Ontario	British Columbia	Canada
1886.....	44,388			16,032	3,941	64,361
1887.....	43,532		13,404	16,598	2,796	76,330
1888.....	42,611		10,710	16,894	8,372	78,587
1889.....	54,161		14,533		15,487	84,181
1890.....	49,206		22,305	5,000		76,511
1891.....	53,649		14,380		950	68,979
1892.....	78,258		22,690		2,300	103,248
1893.....	102,201		22,076		1,325	125,602
1894.....	89,379		19,492		1,120	109,991
1895.....	83,792		17,783		1,222	102,797
1896.....	58,810		17,630	15,270	196	91,906
1897.....	22,400		22,426	2,770	2,099	59,705
1898.....	19,079		17,873	21,111	280	58,343
1899.....	28,000		19,420	25,126	2,071	74,617
1900.....	18,940		19,000	82,950	1,110	122,000
1901.....	18,619		15,489	272,538	7,000	313,646
1902.....	16,172		18,524	359,288	10,019	404,003
1903.....	40,335		12,035	209,634	2,290	264,294
1904.....	61,293		16,152	141,601		219,046
1905.....	84,952		12,681	193,464		291,097
1906.....	97,820		9,933	141,078		248,831
1907.....	89,839		12,748	207,769	2,500	312,856
1908.....	11,802		10,103	216,177		238,082
1909.....			4,150	263,893		268,043
1910.....	18,134	5,336	4,503	231,445		259,418
1911.....	22	31,120	3,616	175,586		210,344
1912.....	30,857	71,520	1,185	112,321		215,883
1913.....	20,436	86,416	5,102	195,680		307,634
1914.....		4,775		240,079		244,854
1915.....		3,683		394,429		398,112
1916.....			3,209	271,967		275,176
1917.....			17,150	198,152		215,302
1918.....	120		8,159	201,119	2,200	211,608
1919.....			321	195,649	1,200	197,170
1920.....			960	126,912	1,200	129,072
1921.....				58,499	1,010	59,509
1922.....			526	16,190	1,255	17,971
1923.....			69	30,447	243	30,759
1924.....			1,408	44	28	1,480
1925.....			3,978			3,978
<b>Total.....</b>	<b>1,279,817</b>	<b>202,850</b>	<b>415,733</b>	<b>4,655,712</b>	<b>72,214</b>	<b>6,626,326</b>

Table 71.—Shipments of Iron Ore from Wabana Mines, Newfoundland, 1895-1925

Year	To Nova Scotia	To United States	To Great Britain and Europe	Total shipments
	Short tons	Short tons	Short tons	Short tons
1895.....	2,686			2,686
1896.....	17,410	22,798		40,208
1897.....	12,143	33,039	5,651	50,833
1898.....	34,622		78,640	113,262
1899.....	26,311	98,485	214,322	339,118
1900.....	195,507	153,867	14,776	364,150
1901.....	457,064	84,292	279,102	820,458
1902.....	376,322	96,762	341,421	814,445
1903.....	273,283	90,711	287,793	651,787
1904.....	342,710	6,025	298,694	647,429
1905.....	506,819	6,490	255,846	769,155
1906.....	628,152	141,854	212,867	983,873
1907.....	672,561	123,972	167,074	963,607
1908.....	713,772	59,532	200,033	973,337
1909.....	697,068	241,207	171,722	1,109,997
1910.....	808,762	247,336	203,528	1,259,626
1911.....	737,261	207,193	237,009	1,181,463
1912.....	956,458	191,779	183,673	1,331,910
1913.....	1,048,433	229,402	328,086	1,605,921
1914.....	417,409	43,513	172,998	633,920
1915.....	802,128		66,323	868,451
1916.....	1,012,060			1,012,060
1917.....	883,346			883,346
1918.....	848,574			848,574
1919.....	499,972			499,972
1920.....	624,596		36,708	661,304
1921.....	178,519		206,010	384,529
1922.....	311,482		811,845	1,123,327
1923.....	451,483		356,753	808,236
1924.....	174,602		919,968	1,094,570
1925.....	384,795		883,056	1,267,851
<b>Total.....</b>	<b>15,096,310</b>	<b>2,078,197</b>	<b>6,934,898</b>	<b>24,109,405</b>

### PIG IRON

Production of pig iron in Canada amounted to 639,258 short tons in 1925, marking a slight recession from the 664,215 short tons of 1924. In 1923 the production amounted to 985,401 short tons, and in 1922 to 428,923 short tons.

About 35 per cent of this production or 225,346 short tons was sold for \$4,393,941; at the same average selling value per ton the total value of the 1925 output would be \$12,465,531 as compared with a computed value of \$13,343,603 for 1924. The unsold tonnage in each year consisted mostly of basic iron and was produced for the further use of the makers. By grades, the production included 458,741 short tons of basic iron, 114,204 short tons of foundry iron and 66,313 short tons of malleable iron. Taking the population of Canada at 9,364,200 persons in 1925, the per capita production of pig iron was 136 pounds as against 144 pounds in the preceding year, 216 pounds in 1923, an average of 96 pounds in 1922 and 151 pounds in 1921.

In 1925, Ontario produced 65 per cent of the Canadian output as against 70 per cent of the total in 1924; Nova Scotia accounted for the balance in each year. During January, Ontario furnaces produced 22,400 short tons of pig iron and maintained this rate of output in February; in March, large rail orders caused an increase in output to 45,920 short tons which was also fairly well maintained during the next two succeeding months; in June, production fell to 29,120 short tons and in July to 23,520 short tons, and, in October, further rail orders caused an increase to 53,760 short tons, the maximum monthly output for the year, after which production declined to 44,800 short tons in November and to 34,720 short tons in December.

Production in Nova Scotia showed a somewhat similar trend. In January, the output stood at 8,960 short tons but rose to 25,760 short tons in March and continued at this level until the furnaces were banked about the end of June; in July, there was no production from these furnaces but, in August, they were started up again to produce 4,480 short tons; the maximum output of 32,480 short tons was reached in November, while in the closing month of the year production declined to 26,880 short tons.

Blast furnaces for the production of pig iron were operated in conjunction with steel furnaces and rolling mills at Sydney, N.S., and in Ontario at Hamilton and Sault Ste. Marie. In addition to these, there are also blast furnaces standing at Port Colborne, Midland, Port Arthur, Parry Sound and Deseronto, with two others, unfinished, at Ojibway near Windsor.

To the furnaces located at the three first-mentioned places the following materials for making pig iron were charged: 1,160,363 short tons of foreign ore valued at \$4,222,448; 592 short tons of pyritic cinders at \$1,777; 47,509 short tons of mill cinders, slag, etc., at \$91,430; 35,781 short tons of scrap at \$390,675; 327,479 short tons of limestone at \$461,890; 249,972 tons of coke made from Canadian coal at \$1,302,848, and 386,418 tons of coke made from imported coal at \$2,508,819.

A review of the price trend during 1925 shows that iron and its products fluctuated within narrower limits, but at considerably lower levels, than in 1924. Based on 1913 prices as 100, the Bureau index was 158.4 in January and 147.3 in December, a decline of about 11 points over the twelve-month period. February at 158.5 marked the high point for the year and November at 147.1 the low point. In 1924, the prices ranged from 168.5 in January to 154.8 in November.

Electric furnaces for the production of ferro-alloys were operated at Hamilton, Niagara Falls and Welland. The output in 1925 amounted to 28,794 short tons as against 29,568 short tons in 1924 and 32,436 short tons in 1923.

Table 72.—Summary of Iron and Steel Statistics, 1923, 1924 and 1925

	—	1923	1924	1925
	Short tons			
Iron ore shipped from mines.....	"	30,759	1,480	.....
Canadian iron ore charged to blast furnaces.....	"	37,812	.....	.....
Imported iron ore charged to blast furnaces.....	"	1,759,466	1,184,575	1,160,363
Iron ore charged to steel furnaces.....	"	58,120	34,810	44,548
Pig-iron made in blast furnaces.....	"	985,401	664,215	639,258
Pig-iron exported.....	"	60,799	16,740	7,093
Pig-iron imported.....	"	37,955	34,386	28,692
Ferro-alloys made.....	"	32,436	29,568	28,794
Ferro-alloys imported.....	"	9,326	8,763	4,604
Ferro-alloys exported.....	"	23,981	30,030	27,768
Pig-iron used in steel furnaces.....	"	594,810	420,924	484,586
Steel ingots and castings made.....	"	990,942	738,939	842,803
Steel rails made.....	"	231,684	224,795	227,895
Coke from Canadian coal used in iron blast furnaces.....	"	336,369	219,870	249,972
Coke made in Canada from imported coal used in iron blast furnaces.....	"	552,995	438,323	386,418
Number of blast furnaces.....	No.	15	15	15
Number of men employed at blast furnaces.....	"	778	591	501
Wages paid at blast furnaces.....	\$	1,231,740	759,235	676,955
Value of pig-iron produced.....	\$	21,355,595	13,343,603	12,465,553
Value of iron and steel goods exported.....	\$	67,035,808	58,621,047	69,481,468
Value of iron and steel goods imported.....	\$	173,720,299	137,979,471	166,573,076

## LEAD

Production of lead from Canadian ores in 1925 amounted to 253,590,578 pounds (126,795.3 tons) which at the average market price at Montreal for the year of 9.20 cents per pound, was valued at \$23,127,460, as against 175,485,499 pounds (87,742.8 tons) valued at \$14,221,345 in 1924 when the average price was 8.104 cents per pound. The increase amounted to about 45 per cent in quantity and 63 per cent in value.

Production in 1925 included 242,454,502 pounds from British Columbia, the greater part of which was from the famous Sullivan mine in East Kootenay; 7,209,534 pounds from Ontario, nearly all of which was in the form of pig lead, produced at Galetta, Carleton county, but including a small amount contained in silver-lead-bismuth bullion exported from south Ontario smelters; and 3,926,542 pounds estimated as recoverable from ores exported from Quebec and the Yukon Territory.

Previous to 1904, lead ores mined in Canada were either exported as ore or smelted in Canadian furnaces and exported in the form of base bullion for refining. A lead refinery employing the Betts electrolytic process has been in operation at Trail, B.C., since 1904, treating the product from lead blast furnaces.

The production of refined lead at Trail in 1925 amounted to 103,036 tons as against 62,726 tons in 1924 and 47,971 tons in 1923, a total of 39,276 tons in 1922 and 28,820 tons in 1921.

The Kingdon Mining, Smelting and Manufacturing Company, Limited, which is now smelting ores from the Kingdon mine at Galetta, Ontario, has been in operation since early in 1919 producing a high-grade pig lead.

**Table 73.—Production\* of Lead from Canadian Ores, 1887-1925**

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per pound
		\$				\$	
1887.....	204,800	9,216	5-400	1907.....	47,738,703	2,542,086	5-325
1888.....	674,500	29,812	4-420	1908.....	43,195,733	1,814,221	4-200
1889.....	165,100	6,488	3-930	1909.....	45,857,424	1,692,139	3-690
1890.....	105,000	4,704	4-480	1910.....	32,987,508	1,216,249	3-687
1891.....	88,665	3,857	4-350	1911.....	23,784,969	827,717	3-480
1892.....	808,420	33,064	4-090	1912.....	35,763,476	1,597,554	4-467
1893.....	2,135,023	79,636	3-730	1913.....	37,662,703	1,754,705	4-659
1894.....	5,703,222	187,636	3-290	1914.....	36,337,765	1,627,568	4-479
1895.....	16,461,794	531,716	3-230	1915.....	46,316,450	2,593,721	5-600
1896.....	24,199,977	721,159	2-980	1916.....	41,497,615	3,532,692	8-513
1897.....	39,018,219	1,396,853	3-580	1917.....	32,576,281	3,628,020	11-137
1898.....	31,915,319	1,206,399	3-780	1918.....	51,398,002	4,754,315	9-250
1899.....	21,862,436	977,250	4-470	1919.....	43,827,699	3,053,037	6-966
1900.....	63,169,821	2,760,521	4-370	1920.....	35,953,717	3,214,262	8-940
1901.....	51,900,958	2,249,387	4-334	1921.....	66,679,592	3,828,742	5-742
1902.....	22,956,381	934,095	4-069	1922.....	93,307,171	5,817,702	6-235
1903.....	18,139,283	768,562	4-237	1923.....	111,234,466	7,985,522	7-179
1904.....	37,531,244	1,617,221	4-309	1924.....	175,485,499	14,221,345	8-104
1905.....	56,864,915	2,676,622	4-707	1925.....	253,590,578	23,127,460	9-120
1906.....	54,608,217	3,089,187	5-657				
				<b>Total.....</b>	<b>1,703,708,645</b>	<b>108,112,452</b>	

\* Previous to 1913 the figures reported show the metal content of the shipments and are somewhat in excess of the actual amount recovered. Since 1912 the data given represent the quantity of lead produced in Canada from domestic ores, together with the estimated lead recovery from lead ores and concentrates exported. From 1887 to 1908, average prices at New York; 1909 and 1910, average prices at Toronto; from 1911 to 1919, average prices in Montreal were used in making up the values shown; since 1920 the quotations used have been furnished by the Consolidated Mining and Smelting Co., Montreal, Que.

**Table 74.—Shipments of Lead Ores and Concentrates from Canadian Mines in 1925**

	Lead ores	Lead concentrates	Dry ores
Tons shipped.....	34,568	173,011	1,009
Reported value of shipments..... \$	1,981,247	13,424,748	14,761
<b>Metal content of shipments—</b>			
Gold.....	fine ounces. 306	1,236	
Silver.....	" " 1,280,163	4,714,798	29,252
Lead.....	pounds 19,689,618	217,981,793	4,000
Zinc.....	" " 3,228,064	20,192,926	42

**Table 75.—Refined Lead Produced in Canada,\* 1904-1925**

Year	Pounds of refined lead produced	Year	Pounds of refined lead produced	Year	Pounds of refined lead produced
1904.....	7,519,440	1912.....	35,893,190	1920.....	28,720,030
1905.....	15,804,509	1913.....	37,923,043	1921.....	60,949,793
1906.....	20,471,314	1914.....	36,443,705	1922.....	81,412,716
1907.....	26,607,461	1915.....	43,518,618	1923.....	101,096,312
1908.....	36,549,274	1916.....	33,087,474	1924.....	130,471,208
1909.....	41,883,614	1917.....	32,115,114	1925.....	213,217,605
1910.....	32,987,508	1918.....	31,571,112		
1911.....	23,525,050	1919.....	34,330,920	<b>Total.....</b>	<b>1,106,099,011</b>

\*Includes the electrolytic lead produced from Canadian and foreign ores at Trail, B.C., and also the pig-lead from Galetta, Ont.

# QUEBEC

Lead production in the province of Quebec dates from the year 1915 when some 40,000 pounds were produced, all of which was derived from the lead-zinc deposits of Notre Dame des Anges. The maximum output of 2.28 million pounds was made in 1919 due to the

demands for lead during the war. During 1922 there was no production from these mines. In 1923 shipping was resumed and it was estimated that 520,041 pounds were recovered from ores exported during that year. In 1925, the output stood at 2,051,100 pounds as against 1,058,983 in 1924.

## ONTARIO

Many years ago, two lead mines were operated in Frontenac county but it was not until 1913 that any statistical record of production was kept. During that year the deposits in Carleton county were opened up and some 33,000 pounds of lead were recovered. This property has been rapidly developed until at the present time the shaft is down to the 1,000-foot level and in 1925 production amounted to 7,146,591 pounds, which constituted a record for the Kingdon property. At the lower levels, zinc also occurs; the zinc is separated from the lead in the mill and stored until a sufficient supply is obtained to make an export shipment.

Small quantities of lead are recovered from the silver-lead-bismuth bullion exported by the south Ontario smelters which handle the ores of the Cobalt district. In 1925, this recovery amounted to 62,943 pounds. The sum of the production from these two sources made a total of 7,209,534 pounds for the province.

## BRITISH COLUMBIA

Lead is derived from the zinc-lead ores of the East and West Kootenays in British Columbia. During 1925 the production from British Columbia ores amounted to 242,-454,502 pounds valued at \$22,111,850. This included the lead recovered in the lead smelter bullion at Trail and the lead estimated as recoverable, from ores exported. Compared with 1924 output when the production amounted to 168,467,628 pounds valued at \$13,-652,617 there was an increase of 44 per cent in quantity and 62 per cent in value.

Table 76.—Production of Lead from Canadian Ores, by Provinces, 1887-1925

Year	Quebec		Ontario		British Columbia		Yukon	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$		\$
1887.....					204,800	9,216		
1888.....					674,500	29,813		
1889.....					165,100	6,488		
1890.....	105,000	4,704						
1891.....	88,665	3,857						
1892.....					808,420	33,064		
1893.....	3,931	146			2,131,092	79,490		
1894.....					5,703,222	187,636		
1895.....					16,461,794	531,716		
1896.....					24,199,977	721,159		
1897.....	177,084	6,340			38,841,135	1,390,513		
1898.....	221,760	8,382			31,693,559	1,198,017		
1899.....					21,862,436	977,250		
1900.....	11,200	490			63,158,621	2,760,031		
1901.....	318,052	13,784			51,582,906	2,235,603		
1902.....	420,000	17,090			22,536,381	917,005		
1903.....			50,000	2,119	18,089,283	766,443		
1904.....			885,000	28,125	36,646,244	1,579,086		
1905.....			284,212	13,378	56,580,703	2,663,254		
1906.....			2,200,000	124,454	52,408,217	2,964,733		
1907.....					47,738,703	2,542,086		
1908.....					43,195,733	1,814,221		
1909.....					45,857,424	1,692,139		
1910.....					32,987,508	1,216,249		
1911.....					23,784,969	827,717		
1912.....					35,763,476	1,597,554		
1913.....			33,000	1,537	37,626,899	1,753,037	2,804	131
1914.....					36,289,845	1,625,422	47,920	2,146
1915.....	40,401	2,262	88,985	4,983	45,377,064	2,541,116	810,000	45,360
1916.....	698,760	59,485	685,932	58,393	39,157,701	3,333,496	955,222	81,318
1917.....	1,378,001	153,468	1,586,711	176,712	29,483,725	3,283,602	127,844	14,238
1918.....	2,110,059	159,180	1,684,366	155,804	47,594,328	4,402,475	9,249	856
1919.....	2,280,000	158,825	1,487,586	103,625	40,060,113	2,790,587		
1920.....	905,472	80,949	2,255,520	201,643	32,792,725	2,931,670		
1921.....	595,881	34,215	3,312,493	190,203	60,298,603	3,462,346	2,472,615	141,978
1922.....			2,890,397	180,216	87,093,266	5,430,265	3,323,508	207,221
1923.....	520,041	37,324	4,401,494	315,983	99,541,818	7,146,107	6,771,113	486,098
1924.....	1,058,983	85,820	5,055,568	409,687	168,467,628	13,652,617	903,520	73,221
1925.....	2,051,100	187,060	7,209,534	657,510	242,454,502	22,111,850	1,875,442	171,040
<b>Total.....</b>	<b>12,984,390</b>	<b>1,049,391</b>	<b>34,110,598</b>	<b>2,634,382</b>	<b>1,639,314,420</b>	<b>103,205,073</b>	<b>17,299,237</b>	<b>1,223,607</b>

Table 77.—Imports into Canada and Exports of Lead, 1923, 1924 and 1925

	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Old and scrap, pig and block.....	2,751,455	145,094	693,244	50,847	505,555	50,606
Bars and sheets.....	407,840	31,321	115,836	12,682	104,814	10,554
Litharge.....	1,672,100	160,928	956,700	89,731	1,515,300	159,576
Acetate and nitrate of lead.....	179,881	17,727	207,364	19,115	222,535	20,516
Other manufactures.....		199,793		234,372		237,717
Pipe lead.....	85,351	6,568	48,961	4,183	42,592	4,099
Shots and bullets.....	10,705	1,255	10,529	1,324	6,040	923
Tea lead.....	215,345	19,622	203,324	22,080	131,402	16,260
Lead pigments—						
Dry white lead.....	49,579	4,273	193,843	17,778	47,549	4,749
White lead, ground in oil.....	117,034	9,518	205,824	19,050	127,016	14,705
Dry red lead and orange mineral.....	867,759	76,510	704,282	64,719	628,648	63,509
<b>Total.....</b>		<b>672,609</b>		<b>535,881</b>		<b>588,304</b>
<b>EXPORTS—</b>						
Lead in ore.....	7,948,100	535,937	13,152,400	784,750	37,504,500	2,341,679
Pig-lead.....	47,144,500	2,496,207	168,709,600	6,866,220	160,130,800	11,809,305
<b>Total.....</b>	<b>55,092,600</b>	<b>3,032,144</b>	<b>121,862,000</b>	<b>7,650,970</b>	<b>197,635,300</b>	<b>14,150,984</b>

*Imports and Exports.*—Imports into Canada of lead and lead manufacturers were valued at \$588,304 in 1925 as against \$535,881 in 1924 and \$672,609 in 1923. Exports increased in value to nearly double the 1924 figures. In 1925, pig lead in ores amounting to 197,635,300 pounds with a value of \$14,150,984 were exported as compared with an export of 121,862,000 pounds valued at \$7,650,970 in 1924. These figures in themselves show the results of the operations of the lead properties that are being developed on such a large scale.

*Prices.*—During 1925 the highest point for the price of lead was reached in January when the price stood at 10.169 cents per pound on the New York market. In May of the same year the price quoted was 7.985 cents, the low price for the year. From then there was a gradual increase until 9.739 cents was reached in November after which the price declined slightly to 9.310 cents per pound in December. The rise in the price of lead has been caused by the increased use of the metal in industry.

Table 78.—Monthly Average Prices of Lead in Montreal, New York and London, 1923, 1924 and 1925

Month	(a) Montreal—cents per pound			(b) New York—cents per pound			(b) London—in £ Sterling per ton of 2,240 pounds		
	1923	1924	1925	1923	1924	1925	1923	1924	1925
							£ s. d.	£ s. d.	£ s. d.
January.....	7-245	7-84	10-04	7-633	7-972	10-169	27 2 4	31 10 7	41 8 10
February.....	7-561	8-38	9-56	8-050	8-554	9-428	28 10 4	34 11 9	37 13 10
March.....	7-798	8-79	9-29	8-252	9-013	8-914	28 16 3	37 3 3	36 16 1
April.....	7-245	7-84	8-29	8-101	8-263	8-005	26 19 1	32 16 5	32 15 10
May.....	6-841	7-04	8-14	7-306	7-269	7-985	25 12 3	29 8 6	32 5 8
June.....	6-760	7-32	8-46	7-146	7-020	8-321	25 8 7	32 2 9	33 9 7
July.....	6-480	7-49	8-74	6-237	7-117	8-151	24 3 9	32 18 4	34 13 11
August.....	6-593	7-64	9-40	6-582	7-827	9-192	24 4 5	32 14 7	38 3 9
September.....	6-865	7-74	9-53	6-856	8-000	9-508	25 13 9	33 0 5	38 17 8
October.....	7-205	8-23	9-55	6-831	8-235	9-513	27 16 3	35 14 4	39 0 4
November.....	7-682	9-20	9-40	6-846	8-689	9-739	30 7 0	39 8 6	36 17 5
December.....	7-870	9-86	9-02	7-369	9-207	9-310	31 0 10	41 11 8	34 14 9
<b>Average.....</b>	<b>7-179</b>	<b>8-10</b>	<b>9-12</b>	<b>7-267</b>	<b>8-097</b>	<b>9-020</b>	<b>27 2 11</b>	<b>34 8 5</b>	<b>36 8 7</b>

(a) Prices furnished by Consolidated Mining & Smelting Co. of Canada, Trail, B.C.

(b) Quoted from the *Engineering and Mining Journal*.

Table 79.—World's Production of Lead, 1913 and 1921-1925

(From the Year Book of the American Bureau of Metal Statistics, 1925)

(Short tons)

Country	1913	1921	1922	1923	1924	1925
<b>NORTH AMERICA—</b>						
United States.....	435,665	402,479	470,000	530,000	590,000	622,500
Canada*.....	18,822	34,381	45,842	53,899	86,583	126,994
Mexico.....	68,324	60,851	133,180	184,242	177,697	205,159
<b>Total North America.....</b>	<b>522,811</b>	<b>503,711</b>	<b>649,022</b>	<b>768,141</b>	<b>854,280</b>	<b>994,653</b>
<b>SOUTH AMERICA—</b>						
Argentina.....		2,756	3,986	4,000	5,000	8,488
Other South America.....	2,729	2,385	2,561	1,600	10,700	14,500
<b>Total South America.....</b>	<b>2,729</b>	<b>5,141</b>	<b>6,547</b>	<b>5,600</b>	<b>15,700</b>	<b>22,988</b>
<b>EUROPE—</b>						
Austria.....	26,558	3,689	4,106	4,690	5,494	5,961
Belgium.....	59,056	32,793	48,032	56,328	64,286	73,082
France.....	31,756	17,058	15,370	19,194	20,811	22,046
Germany (including Upper Silesia).....	207,176	82,676	81,090	53,034	66,915	78,619
Greece.....	20,177	6,140	4,853	4,667	5,628	5,073
Italy.....	23,885	13,763	11,960	18,885	24,318	17,961
Czecho-Slovakia and Jugo-Slavia.....		7,954	11,821	12,909	15,158	14,165
Poland (Upper Silesia excluded).....	2,976	1,113	110			
Russia.....	1,678				709	1,067
Spain.....	219,110	149,760	131,394	140,559	147,708	152,338
Sweden.....	1,361	616	418	338	740	799
United Kingdom.....	20,304	2,727	5,551	7,512	5,938	5,303
<b>Total Europe.....</b>	<b>614,037</b>	<b>318,289</b>	<b>314,705</b>	<b>318,116</b>	<b>357,705</b>	<b>376,414</b>
<b>ASIA—</b>						
Turkey.....	15,318	9,199	5,952	1,543	5,626	5,622
India (Burma).....	6,535	37,737	43,919	51,239	57,969	52,945
Japan.....	4,162	3,459	3,570	2,976	3,242	3,307
<b>Total Asia.....</b>	<b>26,015</b>	<b>50,395</b>	<b>53,441</b>	<b>55,758</b>	<b>66,837</b>	<b>61,874</b>
<b>Australia.....</b>	<b>126,207</b>	<b>63,071</b>	<b>118,064</b>	<b>137,364</b>	<b>140,645</b>	<b>165,634</b>
<b>AFRICA—</b>						
Rhodesia.....		19,808	22,962	12,343	6,613	3,280
Tunis.....		13,911	14,457	15,754	17,345	15,102
<b>Total Africa.....</b>		<b>33,719</b>	<b>37,419</b>	<b>28,097</b>	<b>23,958</b>	<b>18,382</b>
<b>Grand Total.....</b>	<b>1,291,799</b>	<b>974,326</b>	<b>1,179,198</b>	<b>1,313,076</b>	<b>1,459,125</b>	<b>1,639,945</b>

\*Dominion Bureau of Statistics reports the Canadian production of lead as follows: 1913—18,831 tons: 1921—33,340 tons: 1922—46,653 tons: 1923—55,617 tons: 1924—87,743 tons: 1925—126,795 tons.

## MANGANESE

There was no production of manganese in Canada during 1925. In 1924 there were 584 tons valued at \$4,088 reported as being shipped from the province of New Brunswick. Deposits of manganese are known to occur in Lunenburg County, Nova Scotia, and in British Columbia near the town of Kaslo.

## MERCURY

There has been no production of mercury recorded since 1897. The small production reported in 1895, 1896 and 1897, was derived from the deposits at the western end of Kamloops Lake, B.C. and in 1925 some development work was reported in this district. These deposits consist of quartz veins containing pockets of cinnabar, in a zone of decomposed tertiary volcanic rocks.

Mercury has also been reported as occurring in the ores of the Cobalt district, and in the neighbourhood of Field, B.C., and Sechart, on the west coast of Vancouver Island.

The imports of mercury during 1925 were 146,435 pounds, valued at \$118,697, as compared with 85,459 pounds valued at \$60,675 in 1924.

Table 80.—Production of Mercury in Canada, 1895-1925

Year	Flasks	Price per flask	Value
		\$	\$
1895.....	71	33-00	2,343
1896.....	58	33-44	1,940
1897.....	9	36-00	324
1898-1925.....			

Table 81.—Imports into Canada of Mercury, 1921-1925

Year	Pounds	Value
		\$
1921.....	30,894	20,570
1922.....	59,296	47,742
1923.....	135,953	95,922
1924.....	85,459	60,675
1925.....	146,435	118,697

Table 82.—Monthly Average Price of Mercury, 1923, 1924 and 1925

(At New York, per flask of 75 pounds)

Month	1923	1924	1925
	\$	\$	\$
January.....	72-731	59-500	81-596
February.....	70-636	59-565	79-386
March.....	70-808	64-269	80-481
April.....	69-200	74-308	82-327
May.....	68-000	76-962	81-360
June.....	67-769	73-720	83-154
July.....	66-980	72-173	83-077
August.....	65-212	72-096	82-317
September.....	63-000	72-423	81-730
October.....	61-769	70-654	83-856
November.....	61-917	68-708	88-250
December.....	60-000	72-750	90-000
Average.....	66-502	69-761	83-128

## MOLYBDENUM

Molybdenite deposits are known to occur in Nova Scotia, Quebec, Ontario, Manitoba and British Columbia but the principal production so far has come from the Quyon mine in Pontiac county, Quebec.

The Moss mine at Quyon, Quebec, reported a production of 30,764 pounds of molybdenum concentrates containing 72.65 per cent  $\text{MoS}_2$ , or 22,350 pounds of molybdenum sulphide which at 50 cents per pound, was worth \$11,176. During 1924 production from the same property amounted 20,452 pounds of molybdenum concentrates containing 91.62%  $\text{MoS}_2$  or 18,739 pounds of molybdenum sulphide valued at \$9,370. All the molybdenite ore produced in Canada has been concentrated in Canadian mills erected for the purpose.

The war stimulated the demand for molybdenum ores to an appreciable extent but with the cessation of hostilities, the producers were left with considerable stocks on hand for which there was no immediate market, owing to the limited uses of the metal. The ore produced was mostly low-grade material carrying less than 2 per cent  $\text{MoS}_2$ , but there was some which ran from 2 to 15 per cent  $\text{MoS}_2$ , and some higher grade hand-picked material produced.

The market price for molybdenum ore, 85 per cent  $\text{MoS}_2$ , varied from 60-70 cents per pound throughout the year.

Table 83.—Production of Molybdenite in Canada, 1902-1925

Year	Ores mined	Ores treated	Ores and concentrates shipped		MoS <sub>2</sub> content of shipments	MoS <sub>2</sub> production (probable recovery)	
	Tons	Tons	Tons	Value (a) \$	Pounds	Pounds	Value (b) \$
1902.....	3		3.3	400	(c)	(c)	(c)
1903.....	600		85.0	1,275	(c)	(c)	(c)
1904-1913.....							
1914.....	166		16.5	2,063	3,814	3,814	2,063
1915.....	2,242	216	39.0	28,920	29,210	29,210	28,450
1916.....	13,522	9,100	610.0	188,316	156,461	156,461	156,461
1917.....	26,871	22,605	1,554.3	320,006	330,316	288,705	288,705
1918.....	34,030	33,935	461.3	428,807	378,482	378,029	434,733
1919.....	7,280	6,783	46.0	69,203	83,002	83,002	69,203
1920-1923.....							
1924.....	700	668	10.0	9,370	18,739	18,739	9,370
1925.....	3,000	2,779	15.3	11,176	22,350	22,350	11,176

(a) Value as given by the operators. (b) Estimated at the average market value of molybdenite.

(c) No figures available.

## NICKEL

Computed on the same basis as in previous reports published by the Bureau of Statistics, nickel production in 1925 totalled 73,770,842 pounds valued at \$25,082,086 as compared with 69,536,350 pounds worth \$19,470,178 in 1924. But a change in method of compilation was made during the year. The foregoing figures represent the nickel content of matte made in the smelters of the Sudbury area with small amounts of nickel from south Ontario smelters, the whole valued at the average New York price for virgin nickel.

Prior to this year there has always been a difference between the nickel production figures as reported by Ontario Department of Mines and as published by the Dominion Bureau of Statistics. As a result of a conference held during the past year, it was agreed to adopt the same way of making nickel totals in both offices and in this report the necessary changes in method have been made. Computed on the agreed plan, nickel production in 1925 totalled 73,857,114 pounds valued at \$15,946,672 as compared with 61,356,451 pounds worth \$13,126,739 in 1924. These figures include nickel in matte exported by the Mond Nickel Company and the International Nickel Company of Canada valued at 18 cents a pound; refined and electrolytic nickel produced at Port Colborne, valued at the average price obtained for such products sold during the year; nickel in nickel oxide sold from Port Colborne and Deloro, at its total selling value as oxide; and nickel contained in speiss residues exported, valued at 18 cents a pound.

It will be observed that the change in method makes comparatively little difference in the quantity data, but that the new basis of valuation reduces the aggregate value of the nickel output very considerably. But it must be borne in mind that nickel matte must be subjected to a considerable amount of treatment at an appreciable extra cost, before the virgin metal can be obtained. When this extra labour is done in another country, in a plant not included among Canada's industrial organizations, and by men whose earnings are outside Canadian pay-rolls, the force of the argument against the valuation of nickel in matte at refined nickel prices, becomes more pronounced, and the improvement in method adopted herein becomes more apparent.

Table 84.—Production of Nickel from Canadian Ores, 1889-1925

Year	Pounds of nickel	Cents per pound	Value	Year	Pounds of nickel	Cents per pound	Value
			\$				\$
1889.....	830,477	60	498,286	1908.....	19,143,111	43	8,231,538
1890.....	1,435,742	65	933,232	1909.....	26,282,991	36	9,461,877
1891.....	4,035,347	60	2,421,208	1910.....	37,271,033	30	11,181,310
1892.....	2,413,717	58	1,399,956	1911.....	34,098,744	30	10,229,623
1893.....	3,982,982	52	2,071,151	1912.....	44,841,542	30	13,452,463
1894.....	4,907,430	38½	1,870,918	1913.....	49,676,772	30	14,903,032
1895.....	3,888,525	35	1,360,984	1914.....	45,517,937	30	13,655,381
1896.....	3,397,113	35	1,188,990	1915.....	68,308,657	30	20,492,597
1897.....	3,997,647	35	1,399,176	1916.....	82,958,564	35	29,035,497
1898.....	5,517,690	33	1,820,838	1917.....	84,330,280	40	33,732,112
1899.....	5,744,000	36	2,067,840	1918.....	92,507,293	40	37,002,917
1900.....	7,080,227	47	3,327,707	1919.....	44,544,883	40	17,817,953
1901.....	9,189,047	50	4,594,523	1920.....	61,335,706	40	24,534,282
1902.....	10,693,410	47	5,025,903	1921.....	19,293,060	35	6,752,571
1903.....	12,505,510	40	5,002,204	1922.....	17,597,123	35	6,158,993
1904.....	10,547,883	40	4,219,153	1923.....	62,453,843	29-35	18,332,077
1905.....	18,876,315	40	7,550,526	1924.....	69,536,350	28	19,470,178
1906.....	21,490,955	42	8,948,834	1925.....	73,857,114	34	15,946,672
1907.....	21,189,793	45	9,535,407				
<b>Total.....</b>				<b>1,085,278,813..... 375,627,949</b>			

Table 85.—Production in Canada of Nickel, 1924 and 1925

	1924		1925	
	Quantity	Value	Quantity	Value
	Pounds	\$	Pounds	\$
PRODUCTION—				
(a) <i>As computed in previous reports:</i>				
Nickel in matte and speiss exported.....	69,276,313		73,191,262	
Nickel contained in matte made.....	260,037		579,580	
<b>Total.....</b>	<b>69,536,350</b>	<b>19,470,178</b>	<b>73,770,842</b>	<b>25,082,086</b>
(b) <i>As computed by agreement with the Ontario Dept. of Mines:</i>				
Nickel in matte and speiss exported.....	26,374,882	5,747,479	32,787,846	5,901,812
Refined and electrolytic nickel produced.....	25,443,882	5,313,587	31,976,310	7,315,701
Nickel in oxides and salts sold.....	9,532,687	2,065,673	9,092,958	2,729,159
<b>Total.....</b>	<b>61,356,451</b>	<b>13,126,739</b>	<b>73,857,114</b>	<b>15,946,672</b>

In (a) { for 1924, the price of nickel was taken as 28 cents per lb.  
 { for 1925, the price of nickel was taken as 34 cents per lb.

Table 86.—Proportion of Nickel and Copper in Sudbury Matte, 1912-1925

Year	Percentage		
	Nickel	Copper	Total
1912.....	53.5	26.3	79.8
1913.....	52.7	27.4	80.1
1914.....	49.0	31.1	80.1
1915.....	50.3	29.0	79.3
1916.....	51.6	28.0	79.6
1917.....	50.6	26.9	77.5
1918.....	52.6	26.0	78.6
1919.....	51.6	28.3	79.9
1920.....	52.7	27.6	80.3
1921.....	49.4	32.4	81.8
1922.....	50.1	31.3	81.4
1923.....	53.4	27.2	80.6
1924.....	52.6	27.9	80.5
1925.....	52.1	27.9	80.0

Table 87.—Sales of Nickel from the Silver-Cobalt-Nickel Smelters of Southern Ontario 1912-1925

Year	Metallic Nickel		Nickel Oxides (a)	
	Pounds	Value	Pounds	Value
		\$		\$
1912.....			91,377	9,137
1913.....			268,304	30,122
1914.....			392,512	34,883
1915.....	55,325	22,130 (b)	282,025	21,262
1916.....	79,360	31,538 (b)	555,868	101,358
1917.....	265,896	108,334 (b)	657,549	122,963
1918.....	243,186	88,720 (b)	962,309	215,277
1919.....	397,884	137,435 (b)	340,389	32,862
1920.....	204,537	71,287 (b)	24,112	6,312
1921.....	10,973	3,442 (b)	105,535	4,034
1922.....	106,318	31,035 (b)	37,317	3,952
1923.....	33,593	10,075 (b)	71,484	9,246
1924.....	14	4 (b)	60,662	9,414
1925.....	210,985	52,746 (b)	444,496	38,716

(a) Does not include mixed oxides of cobalt and nickel. See Table 38.

(b) Nickel-salts included with nickel oxides.

Table 88.—Imports into Canada and Exports of Nickel 1923, 1924 and 1925

	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Nickel, nickel silver and German silver, in ingots or blocks, n.o.p.....	35,045	12,410	21,761	8,591	6,758	1,398
Nickel in bars and rods, strips, sheets and plates.....	492,177	153,564	624,173	111,827	832,775	150,167
Nickel silver and German silver, in bars, rods, strips, sheets, plates or anodes.....	298,902	82,407	229,182	59,609	220,429	60,144
German, Nevada and nickel silver, manufactures of, not plated.....		207,242		193,283		224,984
Nickel-plated household hollow-ware.....		32,656		39,345		22,907
Nickel-plated ware, n.o.p.....		1,240,762		1,219,515		1,371,161
<b>Total nickel and its products.....</b>		<b>1,729,041</b>		<b>1,632,170</b>		<b>1,830,761</b>
<b>EXPORTS—</b>						
Nickel, fine, contained in ore, matte or speiss.....	28,971,000	4,077,000	36,712,200	5,176,907	40,207,900	6,693,805
Nickel, fine.....	22,897,900	4,649,251	25,985,800	5,090,059	30,116,400	5,980,920
<b>Total.....</b>	<b>51,868,900</b>	<b>8,726,251</b>	<b>62,698,000</b>	<b>10,266,966</b>	<b>70,324,300</b>	<b>12,674,725</b>

**Prices.**—The average price of electrolytic nickel in New York during 1921 according to quotations published by the *Engineering and Mining Journal* was 44 cents per pound for ingots and 41 cents for shot. These quotations were merely nominal owing to the depressed condition of the market. During 1922 new uses were being developed for nickel. Whereas, prior to and during the war a very large proportion of the metal was consumed by armament manufacturing, the cessation of war activities followed by the Washington conference on the limitations of armaments, led producers to investigate new outlets for nickel. These have been found in part in the adaptability of nickel for the cooking-utensil trade, and in the manufacture of resistance wires in electric heating appliances, as a material for coinage, as a constituent of numerous alloys and in the growing use of the metal in the motor car industry. This increased consumption and the lower prices prevailing, have been the important factors in the renewed activity. The average price was 35 cents per pound in 1922; 29.3 cents per pound in 1923, 28 cents per pound in 1924, and 34 cents in 1925.

Table 89.—World's Production of Nickel, 1922-1925

(In terms of metal)

(Short tons)

(From *The Mineral Industry of the British Empire and Foreign Countries*, 1921-1923)

Country	1922	1923	1924	1925
Canada.....	8,799	31,226	34,768	36,929
Germany (Russia).....		(a) 3		
Italy.....	(b)	49		
Norway.....	102	68		
United States (c).....	208	100		
New Caledonia (d).....	3,906	2,939	(e) 4,005	(f) 3,703
<b>Total.....</b>	<b>13,015</b>	<b>34,385</b>	<b>38,773</b>	<b>40,632</b>

(a) Ore, nickel content not stated.

(b) Less than  $\frac{1}{2}$  ton.

(c) Nickel content of salts and nickel produced as a by-product in the electrolytic refining of copper.

(d) Exports.

(e) From *The Mineral Industry*, 1925.(f) For eleven months only taken from *Mineral Industry*, 1925.

## PLATINUM AND PALLADIUM

The most important sources of the metals of the platinum group in Canada are the nickel-copper ores of Sudbury, Ontario, but due to the fact that the precious metals occur in very small quantities through the ore and also because their recovery can only be made in the refining of the copper and nickel, most of the platinum from these ores has been recovered by the refineries operating in foreign countries. It was not until 1918, when the International Nickel Company of Canada built its refinery at Port Colborne, that platinum group metals were recovered in Canada. The British America Nickel Corporation, Limited, opened its refinery at Deschenes, Quebec, in the following year. In both these plants, the precious metals were recovered as residues to be exported for further treatment. During July 1923 the British America Nickel Corporation went into liquidation. In the years 1924 and 1925 the Mond Nickel Company reported their production of the rare metals recovered at their refinery in Swansea, Wales. No record of recoveries at this plant had been obtained in previous years. For this reason statistics on platinum and palladium production during 1924 and 1925 showed an apparently great increase.

For many years, metals of the platinum group have been recovered at the New Jersey plant of the International Nickel Company from residues obtained in the refining of the Sudbury nickel-copper mattes; but as residues from other sources were treated with those of Canadian ores, the total recovery could not be regarded as of Canadian origin; nevertheless, it is believed that the Sudbury mattes have been the source of by far the greater part of the platinum group metals there recovered. This New Jersey plant operated only for a month or two during 1922 and was then dismantled.

Platinum is also found in the alluvial sands of British Columbia, but the output which up to the present has been won by individual placer operators, is of small importance.

Table 90.—Summary of Platinum Statistics, 1924 and 1925

Source	1924			1925	
	Platinum	Palladium	Rhodium, etc.	Platinum	Palladium, Rhodium, etc.
Produced by refineries in Canada or elsewhere, from Canadian mattes and residues.....	Fine oz. 9,181	8,923	(a) 593	8,692	8,288
	Value \$1,090,858	\$811,993	\$51,120	\$1,027,477	\$648,969
British Columbia placers.....	Fine oz. 5			6	
	Value \$569			\$715	
<b>Canada.....</b>	<b>Fine oz. 9,186</b>	<b>8,923</b>	<b>(b) 593</b>	<b>8,698</b>	<b>8,288</b>
	<b>Value \$1,091,427</b>	<b>\$811,993</b>	<b>\$51,120</b>	<b>\$1,028,192</b>	<b>\$648,969</b>

(a) 367 oz. Rhodium valued at \$27,500,—69 oz. Osmium valued at \$4,924,—78 oz. Ruthenium valued at \$2,106 and 79 oz. Iridium valued at \$16,590.

Table 91.—Production of Platinum in Canada from Alluvial Sands, 1887-1925

Year	Value	Year	Value	Year	Fine ounces	Value
	\$		\$			\$
1887.....	5,600	1897.....	1,600	1913.....	18	489
1888.....	6,000	1898.....	1,500	1914.....	23	1,063
1889.....	3,500	1899.....	825	1915.....	23	600
1890.....	4,500	1900.....	457	1916.....	57	3,823
1891.....	10,000	1901.....	190	1917.....	39	2,506
1892.....	3,500	1902.....	190	1918.....	25	2,105
1893.....	1,800	1903.....	420	1919.....	23	1,558
1894.....	950	1904.....	500	1920.....	12	1,154
1895.....	3,800	1905.....		1921.....	7	816
1896.....	750	1906.....		1922.....	5	599
		1907-1912.....		1923.....	6	715
				1924.....		
				1925.....		

Table 92.—Recovery at the International Nickel Company's Works\*—New Jersey, U.S.A., 1907-1922

Year	Matte treated	Gold	Silver	Platinum	Palladium	Rhodium	Others
	Tons	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
1907.....	17.840	993-572	63,400-70	226-800	607-300	(a)	.....
1908.....	18-839	5,238-181	139,329-29	172-316	328-287	(a)	.....
1909.....	18-407	2,113-669	63,138-66	546-627	1,270-598	(a)	.....
1910.....	24-309	2,649-799	60,256-83	258-325	522-804	(a)	.....
1911.....	26-840	2,203-052	70,954-38	655-552	753-363	(a)	.....
1912.....	27-652	2,476-558	62,169-66	496-850	680-130	(a)	.....
1913.....	38-733	2,336-405	77,924-03	192-863	207-713	191-067	.....
1914.....	40-267	2,695-957	75,928-18	748-440	756-360	515-801	.....
1915.....	31-428	3,444-785	101,793-17	452-430	543-240	57-475	.....
1916.....	56-405	3,495-123	110,285-21	1,016-581	1,344-915	257-070	.....
1917.....	59-209	1,954-934	92,963-67	970-695	1,354-459	325-407	.....
1918.....	62-250	1,968-703	107,076-78	649-737	786-654	472-579	.....
1919.....	19-528	634-043	35,689-79	616-716	762-217	227-294	(b) 76-613
1920.....	30-740	613-338	81,882-78	488-901	739-158	390-336	(b) 102-363
1921.....	(c) 2,217-000	6-901	1,242-74	281-582	382-626	256-110	(b) 10-655
1922.....	(c) 3,112-000	206-542	12,211-66	137-882	300-839	103-874	(b) 20-563

\*Plant dismantled during 1922.

(a) Figures not given separately.

(b) Includes Osmium, Iridium and Ruthenium.

(c) These quantities bear no relation to the amounts of precious metals recovered.

Platinum is also recovered in a small way at the Royal Mint in the form of platinum black, a dull black powder of metallic platinum, which is obtained from the treatment of dental and old jewellery scrap. The following table shows the recoveries since 1919.

Table 93.—Recovery of Platinum Black, Iridium Precipitate, and Palladium at the Royal Mint, Ottawa, 1919-1925

Year	Platinum		Iridium		Palladium	
	Ozs. gross	Value	Ozs. gross	Value	Ozs. gross	Value
1919.....	29-281	\$ 2,711-59	20-782	\$ 2,268-12	0-696	\$ 87-00
1920.....	7-220	\$ 400-56				
1921.....	18-843	\$ 1,160-73				
1922.....	12-386	\$ 1,102-35				
1923.....	4-520	\$ 393-47				
1924.....	16-186	\$ 1,408-99				
1925.....	9-500	*				

\* No sale made.

Table 94.—Imports into Canada and Exports of Platinum, 1923, 1924 and 1925

	1923		1924		1925	
	Ounces	Value	Ounces	Value	Ounces	Value
<b>IMPORTS—</b>		\$		\$		\$
Crucibles.....		10,177		11,567		39,685
Wire and bars, strips, sheets or plates.....		117,607		167,225		157,914
Retorts, pans, condensers, etc.....		40,471		579		41,006
<b>Total.....</b>		<b>168,255</b>		<b>179,371</b>		<b>238,605</b>
<b>EXPORTS—</b>						
Jewellers' sweepings.....		274,467		344,074		325,295
Ores and concentrates.....	349	33,838	467	47,723	404	42,489
Old and scrap.....	126	8,988	237	24,372	655	76,423
<b>Total.....</b>		<b>317,293</b>		<b>416,169</b>		<b>441,207</b>

Table 95.—Monthly Average Prices of Platinum, 1923, 1924 and 1925

(From *The Engineering and Mining Journal*, 1925)

(In dollars per fine ounces)

Month	1923	1924	1925
	\$	\$	\$
January.....	112.462	122.115	117.000
February.....	113.273	124.739	117.000
March.....	110.846	121.692	117.000
April.....	116.840	115.577	118.269
May.....	115.007	115.731	119.850
June.....	115.615	116.000	120.000
July.....	116.000	118.231	120.000
August.....	116.000	120.000	120.000
September.....	116.000	118.923	120.000
October.....	116.923	118.000	120.000
November.....	124.479	117.792	120.000
December.....	125.000	117.000	120.000
<b>Average.....</b>	<b>116.537</b>	<b>118.817</b>	<b>119.093</b>

Table 96.—Platinum Metals Consumed in the United States as Reported by Refiners and by Industries, 1924-1925

(From the *Mineral Industry*, 1925)

(In Troy ounces)

Industry	Platinum	Iridium	Palladium	Others	Total	Percentage of total
<b>1924</b>						
Chemical.....	10,507	122	436	403	11,468	7
Electrical.....	16,588	1,269	3,099		20,956	13
Dental.....	11,092	131	10,049		21,272	13
Jewellery.....	87,151	2,204	12,480	746	102,581	62
Miscellaneous.....	5,012	634	2,122	973	8,741	5
<b>Total.....</b>	<b>130,350</b>	<b>4,360</b>	<b>28,186</b>	<b>2,122</b>	<b>165,018</b>	<b>100</b>
<b>1925</b>						
Chemical.....	12,558	71	383	685	13,697	7.75
Electrical.....	18,845	1,579	3,157	111	23,692	13.40
Dental.....	9,293	95	14,952		24,340	13.78
Jewellery.....	93,293	2,840	10,950	2,280	109,363	61.95
Miscellaneous.....	3,356	220	520	1,414	5,510	3.12
<b>Total.....</b>	<b>137,345</b>	<b>4,805</b>	<b>29,962</b>	<b>4,490</b>	<b>176,602</b>	<b>100.00</b>

Table 97.—\*World's Production of Platinum 1912-1925

(In troy ounces, fine platinum)

From *The Mineral Industry* 1925

Year	Australia	Canada (b)	Colombia	Russia	United States (b)	Total
1912.....	463	497	(d) 27,071	(c) 250,000	1,005	279,036
1913.....	335	311	(d) 17,635	(c) 210,000	1,034	229,315
1914.....	185	.....	(d) 16,264	(c) 202,000	1,484	219,933
1915.....	43	475	(d) 18,749	(c) 104,000	(e) 1,190	124,457
1916.....	62	1,040	(d) 25,592	(c) 53,000	(e) 2,780	82,474
1917.....	197	1,036	(d) 26,421	(c) 42,000	(e) 6,280	75,934
1918.....	461	705	(d) 34,266	(c) 21,000	(e) 9,740	66,172
1919.....	162	690	(d) 32,236	(c) 25,000	(e) 10,460	68,558
1920.....	640	4,345	(c) 33,500	9,230	(e) 11,500	59,215
1921.....	189	5,412	(c) 34,000	5,500	2,899	48,000
1922.....	61	4,802	(d) 43,574	18,680	1,998	69,115
1923.....	445	6,810	(d) 40,676	31,700	2,114	81,745
1924.....	490	9,181	(d) 46,533	(e) 40,000	3,523	100,764
1925.....	.....	8,692	(e) 45,000	(e) 40,000	4,560	(e) 100,000

(\*)Estimated content of fine platinum contained in crude platinum output. There has been a small production in some years from India, Borneo, Japan and other countries, but none of importance. (b)Platinum of domestic source recovered by refiners. (c)Estimated by J. M. Hill, U.S. Geol. Surv. (d)Exports. (e)Estimated.

## SILVER

## CANADA

Production of silver from Canadian ores during 1925 amounted to 20,228,988 fine ounces which at the average price for the year of 69.065 cents per ounce, was valued at \$13,971,150 as against 19,736,323 fine ounces valued at \$13,180,113, when the average price was 66.781 cents per ounce. This was an increase of 2.4 per cent in quantity and 6 per cent in value over the totals for 1924.

The production in 1925 included (a) silver contained in silver and gold bullion 10,219,359 fine ounces or 50.5 per cent of the total for Canada; (b) silver contained in blister copper and lead bullion, 6,179,238 fine ounces or 30.5 per cent and (c) silver estimated to have been recovered from ores, concentrates, etc., exported 3,830,391 fine ounces or 19 per cent. The corresponding figures for 1924 were (a) 10,120,311 fine ounces or 51.3 per cent; (b) 5,074,010 fine ounces or 25.6 per cent and (c) 4,542,002 fine ounces or 23.1 per cent.

Although no official statistics of the production of silver had been published prior to 1887, the annual reports of the operating companies showed that from 1869 to 1885 the total production amounted to about four million ounces of silver with a probable value of \$4,800,000. The producing mines were situated in the Port Arthur district in Ontario. From 1887 to 1893 the production ranged in value between \$300,000 and \$400,000 and was derived chiefly from Ontario and Quebec. The next three years saw a rapid increase in production due to the development of the silver-lead deposits of British Columbia, and in 1897 a production valued at over \$3,000,000 was recorded. From that year until 1905 the production varied between \$2,000,000 and \$3,500,000 rising rapidly during the next six years to \$17,580,455 in 1910, as a result of the discovery of the rich ores of the Cobalt district. Since then there has been a falling-off in quantity, but owing to the higher price of the metal, the value of the annual production increased to a maximum of \$20,693,704 in 1918. It will be noticed in the table of production that the output for 1919 though only 50 per cent of that of 1910 or 1911, when the production was at its maximum, was more than equal in value.

Ontario has been the main producer of silver in Canada since 1906, its contribution increasing from 41 per cent of the total for Canada in 1905 to a maximum of 94 per cent in 1911. By 1914 it had fallen to 88.4 per cent and it then gradually decreased each year until 1921 when it stood at 25 per cent. It rose again in 1922 to 48.2 per cent, excluding the corrective figures included in that year. In 1923 it amounted to 56.6 per cent; in 1924 to 57.1 per cent, and in 1925 to 52.2 per cent.

The production of silver from British Columbia was greater in 1925 than in any other year on record and exceeded the output for 1924 by about one-half million ounces. This

province contributed 42.4 per cent of the total Canadian production during the year. The balance of the production, about 5.6 per cent, was made up from small quantities contained in the gold bullion recovered from Nova Scotia and Manitoba gold ores; the silver in pyritic and lead-zinc ores exported from Quebec; the silver estimated as recoverable from the lead ores exported from the Keno Hill district of the Yukon Territory; and the silver associated with the placer gold recovered from the same Territory.

Table 98.—Production of Silver in Canada, 1887-1925

Year	Ounces	Value	Cents per ounce	Year	Ounces	Value	Cents per ounce
		\$				\$	
1887	355,083	347,271	98-00	1907	12,779,799	8,348,659	65-33
1888	437,232	410,998	94-00	1908	22,106,233	11,686,239	52-86
1889	363,318	358,785	93-60	1909	27,529,473	14,178,504	51-50
1890	400,687	419,118	104-60	1910	32,869,264	17,580,455	53-49
1891	414,523	409,549	98-00	1911	32,559,044	17,355,272	53-30
1892	310,651	272,130	86-00	1912	31,955,560	19,440,165	60-83
1893	428,738	330,128	77-00	1913	31,845,803	19,040,924	59-79
1894	847,697	534,049	63-00	1914	28,449,821	15,593,631	54-81
1895	1,578,275	1,030,299	65-28	1915	26,625,960	13,228,842	49-68
1896	3,205,343	2,149,503	67-06	1916	25,459,741	16,717,121	65-66
1897	5,553,446	3,323,395	59-79	1917	22,221,274	18,091,895	81-47
1898	4,452,333	2,593,929	58-26	1918	21,383,979	20,693,704	96-72
1899	3,411,644	2,032,658	59-58	1919	16,020,657	17,802,474	111-122
1900	4,468,225	2,740,362	61-33	1920	13,330,357	13,450,330	100-900
1901	5,539,192	3,265,354	58-95	1921	13,543,198	8,485,355	62-654
1902	4,291,317	2,238,351	52-16	1922	18,626,439	12,576,758	67-521
1903	3,198,581	1,709,642	53-45	1923	18,601,744	12,067,509	64-873
1904	3,577,526	2,047,095	57-22	1924	19,736,323	13,180,113	66-781
1905	6,000,023	3,621,133	60-35	1925	20,228,988	13,971,150	69-065
1906	8,473,379	5,659,455	66-79				
				Total	493,205,870	318,982,304	

Table 99.—Production of Silver from Canadian Ores,\* by Provinces, 1887-1925

Year	Quebec		Ontario		British Columbia		Yukon Territory	
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value
		\$		\$		\$		\$
1887	146,898	143,666	190,495	186,304	17,690	17,301		
1888	149,388	140,425	208,064	185,580	79,780	74,992		
1889	148,517	139,012	181,609	169,986	53,192	49,787		
1890	171,845	179,436	225,633	166,066	70,427	73,666		
1891	185,584	183,357	258,715	222,926	3,306	3,266		
1892	191,910	188,113	41,581	36,425	77,160	67,592		
1893	164,207	126,439	11,284	8,689	253,247	195,006		
1894	101,318	63,830			748,379	470,219		
1895	81,753	53,369			1,496,522	976,930		
1896	70,000	46,942			3,135,343	2,102,561		
1897	80,475	48,116	5,000	2,990	5,472,971	3,272,289		
1898	74,932	43,655	85,000	49,521	4,292,401	2,500,753		
1899	40,231	23,970	202,000	120,352	2,939,413	1,751,302	230,000	137,034
1900	53,400	35,817	161,650	99,140	3,958,175	2,427,548	290,000	177,857
1901	41,459	24,440	151,400	89,250	5,151,333	3,036,711	195,000	114,953
1902	42,500	22,168	145,000	75,632	3,917,917	2,043,586	185,900	96,985
1903	28,600	15,287	17,777	9,502	2,996,204	1,601,471	156,000	83,362
1904	15,000	8,583	206,875	118,376	3,222,481	1,843,935	133,170	76,201
1905	19,620	11,841	2,451,356	1,479,442	3,439,417	2,075,757	89,630	54,093
1906	17,686	11,813	5,401,766	3,607,894	2,990,262	1,997,226	63,665	42,522
1907	16,000	10,452	9,982,363	6,521,178	2,745,448	1,793,519	35,988	23,510
1908	13,299	7,030	19,398,545	10,254,847	2,631,389	1,391,058	63,000	33,304
1909	13,233	6,815	24,822,099	12,784,126	2,649,141	1,364,387	45,000	23,176
1910	7,593	4,061	30,366,366	16,241,755	2,407,887	1,287,883	87,418	46,756
1911	18,435	9,827	30,540,754	16,279,443	1,887,147	1,005,924	112,708	60,078
1912	9,465	5,758	29,214,025	17,772,352	2,651,002	1,612,737	81,068	49,318
1913	34,573	20,672	28,411,261	16,987,377	3,312,343	1,980,483	87,626	52,392
1914	57,737	31,646	25,139,214	13,779,055	3,159,897	1,731,971	92,973	50,959
1915	63,450	31,524	22,748,609	11,302,419	3,565,852	1,771,658	248,049	123,241
1916	98,610	64,748	21,608,158	14,188,133	3,392,872	2,227,794	360,101	236,446
1917	136,194	110,885	19,301,835	15,714,975	2,655,994	2,162,430	119,605	97,379
1918	178,675	172,907	17,198,737	16,643,562	3,921,336	3,794,755	71,915	69,594
1919	140,926	156,600	12,117,878	13,465,628	3,713,537	4,126,556	27,556	30,621
1920	61,003	61,552	9,907,626	9,996,795	3,327,028	3,356,971	19,190	19,363
1921	38,084	23,861	9,761,607	6,116,037	3,350,357	2,099,133	393,092	246,288
1922			10,811,903	7,300,305	7,150,937	4,828,384	663,493	447,997
1923	33,006	21,412	10,540,943	6,838,226	6,113,327	3,965,899	1,914,438	1,241,953
1924	83,814	55,972	11,272,567	7,527,933	8,153,003	5,441,657	226,755	151,429
1925	214,943	148,451	10,529,131	7,271,944	8,579,458	5,925,403	904,893	624,964
Total	3,049,063	2,434,452	383,518,826	233,624,165	119,581,575	78,453,495	6,898,233	4,411,775

\*Does not include small productions from New Brunswick, Alberta, and Manitoba in 1917, from Manitoba from 1918 to 1925, and from Nova Scotia in 1923, 1924 and 1925.

## QUEBEC

During 1925 the production of silver in Quebec was derived chiefly from the lead-zinc ores and to a less extent from pyritic ores that were sent out of the country for treatment in foreign smelters. The total credited to the province for the year under review was 214,943 fine ounces valued at \$148,451, the greatest of any year on record.

## ONTARIO

The production of silver in Ontario in 1925 was 10,529,131 fine ounces valued at \$7,271,944 as against 11,272,567 fine ounces valued at \$7,527,933 in 1924. The total for 1925 included (a) 6,079,142 ounces bullion made in the Cobalt district or 57.7 per cent of the total Ontario production; (b) 2,813,071 ounces or 26.7 per cent recovered by the smelters of southern Ontario; and (c) 333,138 ounces or 3.6 per cent contained in gold bullion, and nuggets sold for exhibition purposes and in products from the nickel refineries; and (d) the balance of 1,253,780 ounces or 12.0 per cent was recovered from Ontario ores, slags and matte treated in the United States and Europe. The corresponding figures for the year 1924 were (a) 5,577,875 fine ounces or 49.6 per cent; (b) 4,309,595 ounces or 38.2 per cent; (c) 282,208 ounces or 2.4 per cent and (d) 1,102,889 ounces or 9.8 per cent.

As indicated above, practically the whole of Ontario's silver production was derived from the Cobalt ores with small quantities obtained from the products of the nickel refineries and from gold bullion. Recovery during the year from these sources was as follows:—silver contained in gold bullion, 247,838 ounces as against 208,562 ounces in 1924; silver produced by the refineries of the International Nickel Company, and Mond Nickel Company, 134,390 ounces as against 122,889 ounces in 1924.

The following table shows the percentage of production from the Cobalt camp, from the Ontario smelters, and from ores exported to the United States.

**Table 100.—Percentage of Silver Production Credited to each Group Treating Ontario Ores, 1917-1925**

Group	1917	1918	1919	1920	1921	1922	1923	1924	1925
	%	%	%	%	%	%	%	%	%
Cobalt district.....	51.1	55.0	48.7	58.6	51.8	74.4	60.8	51.2	60.1*
Ontario smelters.....	33.9	29.0	36.4	33.7	41.1	19.3	30.5	30.4	26.7
Total for Ontario.....	85.0	84.0	85.1	92.3	92.9	93.7	91.3	90.6	86.8
Foreign smelters.....	15.0	16.0	14.9	7.7	7.1	6.3	8.7	9.4	13.2
<b>Total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

\*Includes a small amount of silver from Ontario gold ores exported.

## MANITOBA

Silver production in Manitoba was very small in 1925, there being only about 477 ounces recorded as having been recovered from the gold bullion produced by the Manitoba Metals Corporation, Limited. Copper deposits were developed during the war and from 1918 to 1920 shipments of copper ore containing silver were sent to Trail; in the three years, production from this source amounted to about 50,000 ounces. Owing to the drop in the price of copper and to the high cost of freight rates, practically no shipments of copper ores have been made in recent years.

Table 101.—Production of Silver in Manitoba, 1919-1925

Year	Fine ounces	Value
		\$
1919.....	20,700	23,069
1920.....	15,510	15,649
1921.....	33	20
1922.....	20	14
1923.....	5	3
1924.....	140	93
1925.....	477	329

## BRITISH COLUMBIA

The chief sources of silver in British Columbia have been the silver-lead-zinc ores of the East and West Kootenay districts supplemented by the silver contained in the gold-copper ores of Rossland and the Boundary and Coast districts, with that in the rich ores from the Premier mine near Stewart.

Silver production in 1925 amounted to 8,579,458 fine ounces valued at \$5,925,403 as against 8,153,003 fine ounces valued at \$5,444,657 fine ounces in 1924. Production in 1925 included (a) silver contained in blister copper, 801,809 ounces or 9.3 per cent; (b) silver in lead and gold bullion 5,314,072 ounces or 62 per cent; (c) silver in lead and zinc ores and concentrates exported 309,065 ounces or 3.6 per cent, and (d) silver in gold, silver and copper ores exported, 2,154,512 ounces or 25.1 per cent. Corresponding figures for 1924 were (a) 848,142 ounces or 10.4 per cent; (b) 4,168,464 ounces or 51.3 per cent; (c) 379,254 ounces or 4.6 per cent; (d) 2,757,143 ounces or 33.7 per cent.

## YUKON TERRITORY

The production of silver from the Yukon Territory in 1925 amounted to 904,893 fine ounces derived chiefly from the silver-lead ores exported. In the mining of the silver in the Keno Hill district, ores mined late in one season are hauled down by tractor and piled on the river banks there to await the spring break-up when they can be taken to the customs smelter in the United States. A concentrator was built in 1925 by the Treadwell-Yukon Company which is of much assistance to small operators in the district who are able to get the returns from their operations earlier, also enabling them to realize on lower grade ore that would not stand the cost of shipping outside to a smelter.

The total quantity of silver obtained from placer gold is decreasing. In 1922 only 12,333 fine ounces were recovered as against 14,831 fine ounces in 1921. In 1923 the yield amounted to 13,476 fine ounces, but in 1924 only 7,853 ounces were recovered; in 1925 the total recovery amounted to 10,759 fine ounces.

The following table gives the percentages of recovery from the several sources during the years 1916 to 1925.

Table 102.—Percentage of the Silver Output in the Yukon won from Lode and Placer Mining, 1916-1925

Year	From lode mining	From placer mining
	%	%
1916.....	87.0	13.0
1917.....	66.8	33.2
1918.....	68.2	31.8
1919.....	26.0	74.0
1920.....	14.6	85.4
1921.....	96.2	3.8
1922.....	98.2	1.8
1923.....	99.3	0.7
1924.....	96.5	3.5
1925.....	98.9	1.1

Table 103.—Imports into Canada and Exports of Silver, 1923, 1924 and 1925

	1923	1924	1925
	\$	\$	\$
<b>IMPORTS—</b>			
Silver—			
Bullion in bars and blocks.....	723,040	665,280	1,025,109
Coins.....		1,275	61
Sterling.....	234,047	209,430	210,384
<b>Manufacture of gold and silver—</b>			
Leaf.....	81,252	69,495	76,364
Sweepings.....	4,849	5,508	2,282
Manufactures, n.o.p.....	125,582	142,008	147,839
Electroplated ware.....	509,131	604,500	707,726
<b>EXPORTS—</b>			
In ore, concentrates, bullion.....	11,137,724	12,082,954	12,882,637
Silver coin.....	1,000	50	2,089

**Prices.**—During 1925, the monthly average New York price for silver stood at 68.447 cents per fine ounce in January and 68.472 cents in February, declined to 66.899 cents in April and then gradually rose until the high point for the year of 71.570 cents per ounce was reached in September. The average price for the whole year was 69.065 cents.

In order of importance, the chief silver-producing countries in the world are: Mexico, United States, Canada and Peru. In 1923, these accounted for 82.0 per cent of the total world's production.

Table 104.—Monthly Average Prices of Silver, 1923, 1924 and 1925

From the *Engineering and Mining Journal*.

Month	New York (Cents per fine ounce)			London (Pence per standard ounce)		
	1923	1924	1925	1923	1924	1925
January.....	65.668	63.447	68.447	31.928	33.549	32.197
February.....	64.313	64.359	68.472	30.875	33.565	32.245
March.....	67.556	63.957	67.808	32.310	33.483	31.935
April.....	66.855	64.139	66.899	32.346	33.065	31.372
May.....	67.043	65.524	67.580	32.611	33.870	31.276
June.....	64.861	66.690	69.106	31.611	34.758	31.863
July.....	63.015	67.159	69.442	30.942	34.509	31.954
August.....	62.793	68.519	70.240	30.952	34.213	32.268
September.....	64.203	69.350	71.570	31.698	34.832	32.983
October.....	63.649	70.827	71.106	31.718	35.387	32.972
November.....	63.818	69.299	69.223	33.774	33.775	32.155
December.....	64.705	68.096	68.889	33.375	32.620	31.835
<b>Average.....</b>	<b>64.873</b>	<b>66.781</b>	<b>69.065</b>	<b>31.929</b>	<b>33.969</b>	<b>32.088</b>

Table 105.—World's Production of Silver, 1913 and 1921-1925

From the *Year Book of the American Bureau of Metal Statistics*.

(Fine ounces)

Country	1913	1921	1922	1923	1924	1925
<b>NORTH AMERICA—</b>						
United States.....	66,801,500	53,052,441	56,240,048	66,163,338	64,221,655	61,377,977
Canada.....	31,524,708	13,543,198	18,626,439	18,601,744	19,736,323	20,003,970
Mexico.....	55,486,431	64,465,347	81,076,899	90,810,855	91,437,944	92,886,176
<b>Total North America.....</b>	<b>153,812,639</b>	<b>131,060,986</b>	<b>155,943,386</b>	<b>175,575,937</b>	<b>175,395,922</b>	<b>174,267,123</b>
<b>Central America and West Indies...</b>	<b>2,135,641</b>	<b>2,000,000</b>	<b>2,500,000</b>	<b>3,000,000</b>	<b>3,000,000</b>	<b>3,000,000</b>
<b>SOUTH AMERICA—</b>						
Argentina.....	35,271	25,000	25,000			
Bolivia and Chile.....	3,932,594	5,000,000	8,082,700	8,550,317	7,892,469	8,500,000
Brazil.....	28,364	33,000	25,720	28,613	28,613	30,000*
Colombia.....	587,683	500,000	3,150	3,150	2,900	3,000*
Ecuador.....	22,642	75,000	75,000	75,000	70,000	70,000*
Peru.....	9,617,094	9,853,910	13,169,765	18,654,362	18,800,000	21,253,000
Other countries.....	51,111	13,700	16,850	11,200	11,400	11,000*
<b>Total South America.....</b>	<b>14,274,759</b>	<b>15,500,610</b>	<b>21,398,185</b>	<b>27,322,642</b>	<b>26,805,382</b>	<b>29,867,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	2,104,107	15,000	8,583	14,178	28,678	
France.....	1,005,266	392,873	347,220	213,025	147,858	
Czecho-Slovakia.....		703,056	875,187	702,317	732,538	
Great Britain.....	128,543	12,229	29,885	34,625	33,888	
Germany (including Silesia).....	6,182,445	3,387,420	3,615,525	3,883,945	4,787,521	
Greece.....	803,750	192,900	184,123	195,000	160,750	
Italy.....	423,888	219,392	215,405	385,808	427,595	
Norway.....	300,602	202,115	205,760	298,995	424,380	
Rumania.....	205,822	96,450	62,821	64,300	72,209	
Russia.....		40,000	150,000	192,900	200,000	
Serbia.....	28,758	15,946	26,813	24,562	31,250	
Spain and Portugal.....	4,031,417	2,679,349	2,778,210	2,842,060	2,879,968	
Sweden.....	33,339	13,342	9,645	15,046	60,667	
Turkey.....	1,509,133	100,000	8,037	8,037	219,906	
<b>Total Europe.....</b>	<b>16,757,070</b>	<b>8,070,072</b>	<b>8,517,214</b>	<b>8,874,796</b>	<b>10,207,005</b>	<b>10,500,000*</b>
<b>OCEANIA—</b>						
New South Wales.....	14,504,889	4,241,890	9,912,927	12,067,954	9,256,671	
Queensland.....	604,979	195,328	273,036	469,302	276,651	
Victoria.....	16,195	5,204	6,978	6,304	4,216	
New Zealand.....	975,616	454,000	376,000	527,491	470,472	
Tasmania.....	765,187	348,658	794,585	638,602	642,158	
Other states.....	190,680	117,600	121,208	109,048	89,146	
<b>Total Oceania.....</b>	<b>17,057,546</b>	<b>5,362,680</b>	<b>11,484,734</b>	<b>13,818,701</b>	<b>10,739,314</b>	<b>11,100,000</b>
<b>ASIA—</b>						
India.....	125,209	3,587,587	4,244,304	4,863,066	5,309,203	5,200,000
China.....		40,000	100,000	100,000	110,000	100,000*
Chosen (Korea).....	15,048	2,958	10,835	39,281	50,000	50,000*
Dutch East Indies.....	465,980	1,021,994	1,109,657	1,408,973	2,083,256	2,000,000*
Japan.....	4,700,390	4,185,504	3,886,301	3,597,264	3,542,255	4,022,000
Other countries.....	51,763	29,962	23,890	23,437	11,008	10,000*
<b>Total Asia.....</b>	<b>5,358,390</b>	<b>8,868,005</b>	<b>9,374,987</b>	<b>10,032,021</b>	<b>11,145,722</b>	<b>11,382,000</b>
<b>AFRICA—</b>						
Algeria.....						
Belgian Congo.....	1,454	5,819	6,559	8,745		
Rhodesia.....	121,537	161,383	179,399	161,492	401,277	157,971
Transvaal, Cape Colony and Natal.....	952,928	830,329	1,115,676	1,373,930	1,396,943	1,300,000
Other countries.....		13,362	13,362	1,000	733	1,000*
<b>Total Africa.....</b>	<b>1,075,919</b>	<b>1,010,893</b>	<b>1,314,996</b>	<b>1,545,167</b>	<b>1,798,953</b>	<b>1,458,971</b>
<b>Grand Total.....</b>	<b>210,471,964</b>	<b>171,873,246</b>	<b>210,533,502</b>	<b>240,169,264</b>	<b>239,052,298</b>	<b>241,575,094</b>

<sup>1</sup>Note—The basis of this table is the information published by the Director of the Mint. However revisions and additions have been made so that the totals do not agree with the Mint figures. For 1925 the figures are based on actual reports or reliable estimates, except where the asterisk is used indicating that the figure is conjectural.

(<sup>2</sup>) Dominion Bureau of Statistics reports the Canadian production of silver as follows: 1913—31,845,803 fine ounces; 1921—13, 43,198 fine ounces; 1922—18,626,439 fine ounces; 1923—18,601,744 fine ounces; 1924—19,736,323 fine ounces, and 1925—20,228,988 fine ounces.

## TIN

The occurrence of tin ore has been reported from several localities, one of the most important, perhaps, being the discovery of cassiterite, near New Ross, Lunenburg county, N.S. Reports upon it may be found in the Summary Reports of the Geological Survey Branch of the Department of Mines for 1907, 1908, 1910, 1911 and 1912.

Cassiterite occurs in a few scattered crystals in pegmatite dykes in the drainage basin of McDougal creek, Lardeau division, B.C., and it has been found also in black sands in the Atlin district, B.C., and in the alluvial sands of Dublin gulch, Mayo district, Y.T. Small amounts of tin are also contained in the ores of the Sullivan mine of British Columbia.

The occurrence of tin has been noted in some bodies of sulphide minerals found in the vicinity of West Hawk and Star lakes, near the boundary line between Ontario and Manitoba. Attention is called to these occurrences not on account of their commercial importance, but for the interesting manner of occurrence and their mineral associations.

Ores of tin were formerly imported from South America and reduced in Canada by the Electro Tin Products Company of Brantford, Ontario. The plant consisted of roasting furnaces, electric smelting and slag-cleaning furnaces, but it was only operated for a short time and has been out of commission now for some years.

Table 106.—Imports of Tin into Canada 1923, 1924 and 1925

Item	1923		1924		1925	
	Pounds	Value	Pound	Value	Pounds	Value
		\$		\$		\$
Tin in blocks, pigs and bars.....	4,220,100	1,746,720	4,003,600	1,971,035	4,396,100	2,459,830
Tin foil.....	1,296,143	377,073	1,318,168	402,370	558,997	222,657
Strip waste.....	12,577	370	49,973	74	1,000	38
Collapsible tubes.....		18,880		19,844		27,500
Dairy tin.....		25,098		38,246		64,990
Tinware, etc. (a).....		536,488		626,846		593,579
Tin cans and containers.....		584,378		545,646		679,718
Tin crystals or bichloride of tin.....	138,238	19,790	90,749	23,060	149,301	46,671
<b>Total.....</b>		<b>3,308,797</b>		<b>3,627,121</b>		<b>4,094,983</b>

(a) Tinware, plain, japanned or lithographed, and all manufactures of tin, n.e.s.

## ZINC

The production of zinc from Canadian ores during 1925 totalled 109,268,511 pounds which at the average St. Louis price for the year of 7.622 cents per pound was worth \$8,328,446 as against 98,909,077 pounds valued at \$6,274,791 in 1924 when the average price was 6.344 cents per pound. The increase amounted to 10.4 per cent in quantity and 32.7 per cent in value.

In 1925, production included 76,924,000 pounds of refined zinc produced at Trail, B.C.; 9,936,000 pounds estimated as recoverable from the zinc-lead ores exported from Quebec; 22,228,966 pounds estimated as recoverable from ores and concentrates shipped from British Columbia; and a small amount estimated as recoverable from zinc concentrates shipped from the lead mine at Galletta, Ontario. The major part of the total Canadian production was credited to the Sullivan mine in British Columbia, owned and operated by the Consolidated Mining and Smelting Company at Trail, B.C. Ores on this property, although known for some time, are very complex and several years of research were spent in the development of a satisfactory process for the separation of the lead and the zinc. When this

was accomplished, the Sullivan concentrator at Kimberley was built. Progress has been highly satisfactory, and the production of the concentrator has exceeded expectations. At first the output was in excess of the refinery capacity of the Trail smelter and large quantities of zinc concentrates had to be exported for treatment, but now the Trail smelter and refinery capacity have been considerably enlarged so that the zinc concentrates exported from British Columbia during 1925 were reduced to only about two-thirds the tonnage exported in 1924.

The Stirling zinc mine situated on Cape Breton Island is being developed by a large American company. The silver-lead-zinc property at Notre Dame des Anges, Quebec, is also a source of some commercial zinc. Old dumps have been worked over and concentrates have been made and exported with the result that during 1925 recoveries from this district totalled about 10 million pounds. This was an increase of about 7 million pounds over the amount recorded in 1924.

**Table 107.—Production of Zinc in Canada, 1911-1925**

Year	*Pounds	Total Value	Average price per pound
		\$	Cents
1911.....	1,877,479	108,105	5-758
1912.....	4,283,760	297,421	6-943
1913.....	5,640,195	318,558	5-648
1914.....	7,246,063	377,737	5-213
1915.....	9,771,651	1,292,789	13-230
1916.....	23,364,760	2,991,623	12-804
1917.....	29,668,764	2,640,817	8-901
1918.....	35,083,175	2,862,436	8-159
1919.....	32,194,707	2,362,448	7-338
1920.....	39,863,912	3,057,961	7-671
1921.....	53,089,356	2,471,310	4-655
1922.....	56,290,000	3,217,536	5-716
1923.....	60,416,240	3,991,701	6-607
1924.....	98,909,077	6,274,791	6-344
1925.....	109,268,511	8,328,446	7-622

\*Estimated smelter recoveries, including for years 1916 to 1925 the actual zinc recovered at Trail, B.C.

**Table 108.—Production of Refined Zinc at Trail, B.C., 1916-1925**

Year	Short tons
1916.....	2,974
1917.....	9,985
1918.....	12,574
1919.....	12,326
1920.....	18,517
1921.....	26,494
1922.....	28,145
1923.....	30,025
1924.....	27,444
1925.....	38,462

**Imports and Exports.**—In 1920, imports of zinc and zinc products into Canada reached a total value of \$2,555,166; in the following year the value dropped to \$1,309,272 but in 1922 it rose again to \$1,839,373. In 1923, the value of zinc and its products imported amounted to \$1,716,741; in 1924 it was slightly less at \$1,656,088 and in 1925 the total value stood at \$1,686,071.

Exports of zinc in ore and as spelter in 1925 were valued at \$5,559,030 as against \$4,145,786 in 1924 and a total of \$2,519,073 in 1923.

Table 109.—Imports into Canada and Exports of Zinc and Brass, 1923, 1924 and 1925

	1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value
<b>IMPORTS</b>		\$		\$		\$
<b>Zinc and Zinc Products—</b>						
Zinc, in blocks, pigs and sheets.....	3,201,082	288,128	3,073,644	259,847	4,322,335	407,236
Zinc, as spelter.....	685,356	54,408	1,230,251	84,486	1,265,510	100,736
Zinc white (80% Zn).....	18,976,437	1,206,560	16,264,059	1,063,370	13,301,222	923,755
Zinc dust (90% Zn).....	394,378	41,167	359,219	30,668	315,440	28,664
Zinc, sulphate and chloride of (44% Zn)....	661,630	21,991	941,039	41,153	1,070,595	47,450
Zinc, manufactures of.....		104,487		176,564		178,230
<b>Total.....</b>		<b>1,716,741</b>		<b>1,656,088</b>		<b>1,686,071</b>
<b>Brass and Brass Products—</b>						
Brass, in blocks, pigs and ingots (30% Zn).....	125,500	17,418	313,200	38,291	262,000	30,461
Brass, old and scrap (30% Zn).....	1,724,600	177,198	3,002,400	272,307	3,604,900	344,303
Brass, tubing (30% Zn).....	1,714,819	474,279	1,699,613	396,074	1,966,480	485,961
Brass, plain wire (30% Zn).....	495,444	132,635	424,525	99,332	366,032	87,724
Brass, bars and rods.....	1,260,700	235,003	727,800	115,231	685,300	131,182
Brass, strips, sheets or plates.....	1,588,100	330,014	815,100	162,493	948,400	155,089
Brass, wire cloth, n.o.p.....		246,126		154,796		125,752
Brass, cup for manufacture of shells.....		125,417		119,993		106,373
Brass, caps for electric batteries.....		5,097		12,870		16,522
Brass, hand-pumps.....		21,394		16,970		15,739
Brass, nails, tacks, etc.....		2,248		3,467		4,503
Brass and copper rivets, burrs and washers.....		24,203		26,634		45,334
Brass, valves.....		226,485		159,187		206,540
Brass, other manufactures, n.o.p.....		2,075,433		1,828,039		2,194,641
Carburettors of brass.....		344,188		237,482		252,521
<b>Total.....</b>		<b>4,437,138</b>		<b>3,643,166</b>		<b>4,202,645</b>
<b>EXPORTS</b>	Tons		Tons		Tons	
<b>Zinc—</b>						
Ore.....	531	5,310	63,931	1,626,031	48,340	1,778,019
Spelter.....	19,258	2,513,763	20,016	2,519,755	24,913	3,781,011
<b>Total.....</b>		<b>2,519,073</b>		<b>4,145,786</b>		<b>5,559,030</b>
<b>Brass—</b>	Pounds		Pounds		Pounds	
Old and scrap.....	6,760,100	563,730	6,000,200	429,704	9,819,600	838,908
Rods, sheets and tubing.....	1,000	302	5,800	1,134	49,400	10,663
Valves.....		190,060		177,883		160,727
Mfrs. of brass, n.o.p.....		49,633		54,837		114,676
<b>Total.....</b>		<b>803,725</b>		<b>663,558</b>		<b>1,124,974</b>

**Prices.**—The price of zinc on the St. Louis market in 1925 averaged 7.622 cents per pound as against 6.344 cents in 1924. The highest quotation during 1925 was in the month of November when 8.614 cents was reached, and the lowest was in the month of May when the figure stood at 6.951 cents. The Canadian market is centred in Montreal and Toronto to which points the Consolidated Mining and Smelting Company is the most important shipper. The average yearly Montreal quotation for zinc was 9.06 cents per pound and the fluctuations correspond closely to price changes in the United States markets.

Table 110.—Monthly Average Prices of Zinc (Spelter), 1923, 1924 and 1925

Month	(a) Montreal (In cents per pound)			(b) St. Louis (In cents per pound)			Ordinary Brands, in London, (Per long ton)		
	1923	1924	1925	1923	1924	1925	1923	1924	1925
							£ s. d.	£ s. d.	£ s. d.
January.....	8-544	8-024	9-22	6-815	6-426	7-738	35 14 8	34 15 3	37 18 4
February.....	8-840	8-38	8-93	7-152	6-756	7-480	35 12 3	36 10 4	36 10 6
March.....	9-412	8-162	8-75	7-706	6-488	7-319	36 14 5	35 5 11	35 14 9
April.....	8-879	7-72	8-44	7-197	6-121	6-985	24 5 6	32 11 9	34 12 10
May.....	8-013	7-33	8-40	6-625	5-793	6-951	31 1 2	30 12 11	34 4 5
June.....	7-650	7-30	8-45	6-031	5-792	6-990	29 10 11	31 15 9	34 2 11
July.....	7-740	7-40	8-65	6-089	5-898	7-206	29 6 8	32 3 10	34 17 10
August.....	8-086	7-64	9-01	6-325	6-175	7-576	32 7 8	32 10 10	36 13 9
September.....	8-190	7-65	9-18	6-438	6-181	7-753	33 9 4	32 18 6	37 8 8
October.....	7-992	7-79	9-71	6-293	6-324	8-282	32 19 11	33 10 3	39 17 8
November.....	8-014	8-25	10-10	6-347	6-796	8-614	32 18 11	35 0 5	39 0 9
December.....	7-850	8-84	9-91	6-260	7-374	8-565	32 12 2	36 18 8	38 6 6
Average.....	8-267	7-873	9-06	6-607	6-344	7-622	33 1 2	33 14 7	36 12 6

(a) Supplied by Consolidated Mining and Smelting Co. of Canada, Trail, B.C.  
(b) Quoted from the *Engineering and Mining Journal*.

Table 111.—World's Production of Zinc, 1913, and 1921-1925 (a)

(From the 1925 Year Book of the American Bureau of Metal Statistics.)

(Short tons)

Country	1913	1921	1922	1923	1924	1925
United States.....	352,952	215,614	373,678	531,202	535,846	590,928
Mexico.....						1,406
Canada <sup>1</sup> .....		26,494	27,782	30,025	27,443	38,481
Belgium.....	225,050	72,917	123,777	162,082	178,242	189,473
France.....	74,815	26,640	43,779	54,381	63,614	77,161
Germany (including Silesia).....	307,238	99,207	121,705	127,892	131,513	172,790
Great Britain.....	73,000	6,515	20,529	35,033	43,098	42,726
Italy.....		427	2,901	4,060	6,569	7,098
Austria-Hungary.....	23,921				661	
Jugo-Slavia and Czecho-Slovakia.....		6,613	9,920	11,019	9,946	6,283
Netherlands.....	26,804	7,030	14,327	18,126	20,051	23,277
Norway.....	10,234	2,205	2,039	4,170	5,538	6,393
Poland (excluding Silesia).....	8,398	7,745	10,031	13,546	16,986	17,850
Soviet Union.....					661	1,653
Spain.....	3,650	7,427	6,910	12,039	14,084	15,983
Sweden.....	2,204	3,858	1,757	1,420	3,881	5,181
Australia.....	4,614	1,883	26,339	46,091	52,205	51,280
Japan.....	992	11,435	13,806	15,190	15,432	15,542
French Indo-China.....					143	1,323
Total.....	1,113,872	496,040	799,280	1,066,276	1,125,252	1,264,828

<sup>1</sup>Dominion Bureau of Statistics reports the Canadian production of Zinc in Canada as follows: 1913—2,820 tons; 1921—26,545 tons; 1922—28,145 tons; 1923—30,208 tons; 1924—49,455 tons; 1925—54,634 tons.  
(a) Slab zinc produced in the several countries, unallocated according to the origin of the ore.

## NON-METALLICS

## ABRASIVES

**Corundum.**—No production of corundum in Canada was reported during the year 1925. Corundum is found in an area embracing several townships in Renfrew and Hastings counties in the province of Ontario. The industry made its appearance there in 1900, production reaching a maximum of 2,914 tons in 1906. From 1907 to 1913, although the yearly production was smaller, it remained fairly constant. In August, 1918, operations were indefinitely suspended, but during the years 1919, 1920 and 1921 old tailings were treated for the recovery of grain corundum. In 1921, grain corundum amounting to 407 tons valued at \$55,965, was exported to the United States, but no shipments have been reported since that time.

Table 112.—Production of Corundum in Canada, 1900-1925

(Short tons)

Year	Corundum-bearing rock treated	Grain corundum graded	Per cent recovery	Shipments of grain corundum				Average price in cents per pound
				Sold in Canada	Exported	Total shipments	Total value	
	Tons	Tons	%	Tons	Tons	Tons	\$	
1900.....		60		3		3	300	5.00
1901.....	4,134	434	10.7	85	302	387	46,415	5.97
1902.....	7,996	805	10.1	106	662	768	84,465	5.49
1903.....	(a) 8,877	839	9.5	85	618	703	77,510	5.51
1904.....	28,187	1,654	5.9	116	877	993	109,545	5.51
1905.....	23,571	1,681	7.1	140	1,504	1,644	149,153	4.48
1906.....	45,719	2,914	6.4	162	2,112	2,274	204,973	4.50
1907.....	60,532	2,682	4.4	164	1,728	1,892	177,922	4.70
1908.....	2,678	106	4.0	99	990	1,089	100,398	4.60
1909.....	35,894	1,579	4.4	129	1,362	1,491	162,492	5.45
1910.....	37,183	1,636	4.5	106	1,764	1,870	198,680	5.31
1911.....	41,975	1,641	3.9	92	1,380	1,472	161,873	5.50
1912.....	36,879	1,620	4.4	63	1,897	1,960	239,091	6.10
1913.....	12,290	763	6.2	23	1,154	1,177	137,036	5.82
1914.....	12,111	695	5.7	14	534	548	72,176	6.59
1915.....	1,724	116	6.7	21	241	262	33,138	6.33
1916.....	1,864	67	3.6	8	59	67	10,307	7.65
1917.....	4,659	188	4.0	16	172	188	32,153	8.55
1918.....	3,184	137	4.3		137	137	26,112	9.90
1919.....	1,300	26	2.0					
1920.....	(b) 13,025	322	2.5	20	176	196	24,547	6.25
1921.....	(b) 11,256	407	3.6		403	403	55,965	6.94
1922-1925.....								
<b>Total.....</b>	<b>395,138</b>	<b>20,422</b>		<b>1,452</b>	<b>18,072</b>	<b>19,524</b>	<b>2,104,251</b>	

(a) In addition to this amount which was milled in Canada, 267 tons of ore was mined and shipped to the United States for treatment there.

(b) Tailings only.

**Garnets.**—A deposit of garnets in Ashby township Ontario, was operated during 1923 and 1,250 tons of garnet concentrates and crude garnets were shipped to Niagara Falls, New York, for use as an abrasive material. In 1924, a shipment of 360 tons of garnets was made but there was no production of this commodity in 1925.

**Grinding Pebbles.**—Production of grinding pebbles in Canada during 1925 totalled 105 tons valued at \$945. These pebbles were gathered along the shore of Lake Superior near Jackfish, Ontario.

**Grindstones, Pulpstones and Scythestones.**—The production of grindstones, pulpstones and scythestones in Canada in 1925 amounted to 2,562 tons valued at \$124,165 as compared with the 1924 production of 2,691 tons valued at \$130,824. Of the year's shipments, Nova Scotia contributed 439 tons valued at \$16,723; the production in New Brunswick amounted to 1,642 tons valued at \$79,661, and British Columbia reported 481 tons valued at \$27,781.

Table 113.—Production of Grindstones, Pulpstones and Scythestones, in Canada, 1923, 1924 and 1925

Province	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Nova Scotia.....	256	7,906	338	12,525	439	16,723
New Brunswick.....	1,758	72,177	2,113	99,299	1,642	79,661
British Columbia.....			240	19,000	481	27,781
Total.....	2,014	80,083	2,691	130,824	2,562	124,165

Table 114.—Production of Grindstones, etc., in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value
		\$			\$
1886.....	4,020	46,545	1906.....	5,363	59,814
1887.....	5,292	64,008	1907.....	5,414	60,376
1888.....	5,764	51,129	1908.....	3,843	48,128
1889.....	3,404	30,863	1909.....	4,275	54,664
1890.....	4,884	42,340	1910.....	3,973	47,196
1891.....	4,479	42,587	1911.....	4,566	52,942
1892.....	5,283	51,187	1912.....	4,412	52,090
1893.....	4,600	38,379	1913.....	4,837	51,395
1894.....	3,757	32,717	1914.....	3,976	54,504
1895.....	3,475	31,932	1915.....	2,580	35,768
1896.....	3,713	32,310	1916.....	3,478	52,782
1897.....	4,572	42,340	1917.....	2,523	45,754
1898.....	4,935	44,775	1918.....	3,072	83,005
1899.....	4,511	43,265	1919.....	2,020	60,516
1900.....	5,539	53,450	1920.....	2,444	88,136
1901.....	4,581	45,690	1921.....	1,231	64,067
1902.....	4,633	44,118	1922.....	1,005	43,742
1903.....	5,538	48,302	1923.....	2,014	80,083
1904.....	4,649	42,782	1924.....	2,691	130,824
1905.....	5,540	62,375	1925.....	2,562	124,165
			Total.....	159,498	2,181,975

**Tripolite.**—There was no production of tripolite reported in 1925, but in 1924, shipments amounting to 33 tons valued at \$838 were made. The 1923 production amounted to 130 tons worth \$3,250.

Tripolite is a silicious material closely related to quartz and is used extensively as an abrasive. It is usually given a preliminary calcine in rotary furnaces before shipment. The entire Canadian production is derived from a deposit of this commodity at Silica Lake, Colchester county, Nova Scotia.

Table 115.—Production of Tripolite in Canada, 1896-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1896.....	644	9,960	1906.....			1916.....	620	12,139
1897.....	15	150	1907.....	30	225	1917.....	600	18,000
1898.....	1,017	16,660	1908.....	30	195	1918.....	500	12,500
1899.....	1,000	15,000	1909.....			1919.....	565	11,300
1900.....	336	1,950	1910.....	22	134	1920.....	260	8,600
1901.....	850	15,300	1911.....	20	122	1921.....	341	11,268
1902.....	1,052	16,470	1912.....	38	230	1922.....	219	5,781
1903.....	835	16,700	1913.....	620	12,138	1923.....	130	3,250
1904.....	320	6,400	1914.....	650	13,000	1924.....	33	838
1905.....	300	3,600	1915.....	317	12,119	1925.....		
						Total.....	11,364	224,029

**Volcanic Ash.**—A deposit of volcanic ash near Waldeck, Saskatchewan, was operated in 1925 and 160 tons worth \$1,380 were shipped. In 1924, the production was 245 tons worth \$1,103. This material is used as a base in the manufacture of cleansers.

**Imports and Exports.**—Imports into Canada of grindstones, burrstones, emery and other abrasive materials amounted in value to \$2,306,122 in 1925. Exports during the same year were valued at \$3,073,356; the greater part of this sum represented sales of the artificial abrasive, carborundum. Grindstones and stone for the manufacture of grindstones exported, were valued at \$62,223; natural abrasives, \$464; and artificial abrasives, made up into wheels, stones, etc., totalled \$32,030 in value.

Table 116.—Imports into Canada and Exports of Abrasives, 1923, 1924 and 1925

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Grindstones.....		482,340		593,670		661,352
Burrstones in blocks, etc..... No.	519	6,908	145	791	5	£84
Emery in bulk, crushed or ground.....		57,267		53,208		223,598
Emery and carborundum wheels and manu- factures.....		151,065		76,971		258,207
Pumice and pumice stone ground.....		28,222		28,127		27,581
Iron sand or globules for polishing and saw- ing.....		20,855		17,985		11,702
Sandpaper, emery paper, etc.....		293,965		279,586		305,042
Artificial abrasives.....		243,408		125,303		123,651
Diamond dust or bort and black diamonds for borers.....		244,252		399,735		694,405
<b>Total.....</b>		<b>1,528,282</b>		<b>1,575,376</b>		<b>2,306,122</b>
<b>EXPORTS—</b>						
Grindstones, manufactured.....		37,101		49,630		61,429
Stone for the manufacture of grind- stones..... Tons	170	1,190	120	1,080	93	794
<b>Abrasives—</b>						
Natural, n.o.p..... Cwt.	47,710	115,342	5,756	10,321	464	464
Artificial, crude, including carbor- undum..... Cwt	887,343	2,819,558	791,863	2,591,310	955,184	2,978,639
Artificial, made up into wheels, stones, etc.....		27,127		13,264		32,030
<b>Total.....</b>		<b>3,000,318</b>		<b>2,665,605</b>		<b>3,073,356</b>

## ACTINOLITE

Production of actinolite in Canada has been confined to Elzevir and Kaladar townships in Hastings and Addington counties, Ontario; the centre of the industry being at Actinolite. This material which is calcium-magnesium-iron silicate, is used in the manufacture of coal-tar roofing compounds.

Shipments to the United States from milled stock on hand during 1925, amounted to 40 tons valued at \$500 as compared with 90 tons worth \$1,225 in 1924.

Table 117.—Production of Actinolite in Canada, 1897-1925

Year	Tons	Value	Year	Tons	Value
		\$			\$
1897.....	205	1,845	1915.....	220	2,420
1898-1900.....			1916.....	250	2,750
1901.....	521	3,126	1917.....	120	1,320
1902.....	550	4,400	1918.....	228	2,508
1903.....	550	3,108	1919.....	80	880
1904-1909.....			1920.....	100	1,160
1910.....	30	330	1921.....	78	975
1911.....	67	736	1922.....	50	575
1912.....	92	1,000	1923.....	53	583
1913.....	66	720	1924.....	90	1,225
1914.....	119	1,304	1925.....	40	500
			<b>Total.....</b>	<b>3,509</b>	<b>31,465</b>

## ASBESTOS

A new high record was established in the Canadian production of asbestos in 1925. Total shipments for the year were 290,389 short tons, valued at \$8,988,360, as compared with 225,744 tons at \$6,710,830 in 1924. The average price per ton received by the operators was \$30.95, while in 1924 receipts averaged \$29.73.

Asbestos rock mined and raised during the year amounted to 4,121,258 tons. In the same period the mills handled 3,386,752 tons or 82 per cent of the tonnage raised; the remainder consisted of waste rock and was sent directly to the dumps.

Exports of asbestos (including sand and waste) in 1925, totalled 258,017 tons, or 53,198 tons in excess of the quantity exported in 1924. Shipments to Great Britain amounted to 8,709 tons, to the United States 209,879 tons, and to Germany, 11,120 tons. Exports of asbestos to Australia, Belgium, Italy and the Netherlands increased materially.

Sales of Rhodesian and South African asbestos in 1925 were considerably greater than in the previous year. The Russian output also increased, while the Cyprus production remained at the same level as in 1924. Canada produces about 85 per cent of the total world's supply of asbestos.

Table 118.—Production of Asbestos in Canada, 1880-1925

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1880*	380	24,700	1904	48,465	1,226,352
1881*	540	35,100	1905	68,263	1,503,259
1882*	810	52,650	1906	82,185	2,060,143
1883*	955	68,750	1907	90,426	2,505,042
1884*	1,141	75,097	1908	90,773	2,573,335
1885*	2,440	142,441	1909	87,300	2,301,775
1886*	3,458	206,251	1910	102,215	2,573,603
1887	4,619	226,976	1911	127,414	2,943,108
1888	4,404	255,007	1912	136,301	3,137,279
1889	6,113	426,554	1913	161,086	3,849,925
1890	9,860	1,260,240	1914	117,573	2,909,806
1891	9,279	999,878	1915	136,842	3,574,985
1892	6,082	390,462	1916	154,149	5,228,869
1893	6,331	310,156	1917	153,781	7,230,383
1894	7,630	420,825	1918	158,259	8,970,797
1895	8,756	368,175	1919	159,236	10,975,369
1896	12,250	429,856	1920	199,573	14,792,201
1897	30,442	445,368	1921	92,761	4,906,230
1898	23,785	491,197	1922	163,706	5,552,723
1899	25,536	485,849	1923	231,482	7,522,506
1900	29,141	748,431	1924	225,744	6,710,830
1901	40,217	1,259,759	1925	290,389	8,988,360
1902	40,416	1,148,319			
1903	41,677	929,757			
			<b>Total</b>	<b>3,394,185</b>	<b>123,238,678</b>

\*Exports.

Table 119.—Output and Sales of Asbestos in Canada, 1924 and 1925

Classification	1924				1925			
	Total output	Sold or shipped			Total output	Sold or shipped		
		Quantity	Total sales value at mill	Average value per ton		Quantity	Total sales value at mill	Average value per ton
	Tons	Tons	\$	\$	Tons	Tons	\$	\$
Crude No. 1.....	995	980	403,304	411.54	806	1,044	381,926	365.13
Crude No. 2.....	2,805	3,808	762,166	200.15	2,701	3,777	778,895	206.22
Other crudes.....	190	71	12,080	170.14	260	348	49,030	140.90
Spinning stocks.....	8,623	10,205	1,112,796	109.04	13,509	16,070	1,710,379	106.43
Shingle stocks.....	15,734	19,292	903,775	46.85	25,201	30,010	1,523,980	50.78
Mill board and paper stocks.....	73,282	70,387	2,208,698	31.38	94,350	93,937	2,915,046	31.03
Fillers, floats and other short fibres.....								
Sand, gravel and crushed rock.....	124,840	121,001	1,308,011	10.81	128,382	128,338	1,618,290	12.61
					16,409	16,865	10,814	0.64
<b>Total.....</b>	<b>226,469</b>	<b>225,744</b>	<b>6,710,830</b>	<b>29.73</b>	<b>281,718</b>	<b>290,389</b>	<b>8,988,360</b>	<b>30.95</b>

Table 120.—Imports of Asbestos into Canada, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Asbestos in any form other than crude, and all manufactures of, n.o.p.....		697,319		441,300		350,600
Asbestos packing.....	84	78,009	111	98,418	111	98,169
<b>Total.....</b>		<b>775,328</b>		<b>539,718</b>		<b>448,769</b>

Table 121.—Exports of Canadian Asbestos by Countries of Destination  
1923, 1924 and 1925

Commodity and Destination	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>ASBESTOS—</b>						
Great Britain.....	3,459	215,934	6,614	374,680	6,846	608,774
United States.....	109,025	5,596,569	72,233	3,904,161	94,292	4,979,803
Australia.....	180	9,900	473	24,130	1,360	94,272
Austria.....	400	30,000				
Belgium.....	7,223	411,250	2,798	150,065	6,002	370,530
France.....	5,016	409,410	5,640	452,151	5,484	428,195
Germany.....	6,289	575,211	9,133	785,703	8,947	737,802
Italy.....	505	52,882	2,439	151,778	3,730	260,263
Japan.....	4,936	287,521	9,222	358,596	7,127	373,312
Netherlands.....	353	28,275	1,068	88,580	2,707	212,855
Spain.....					130	7,800
Other countries.....	165	11,825	110	7,975	125	7,000
<b>Total.....</b>	<b>137,551</b>	<b>7,628,777</b>	<b>109,730</b>	<b>6,297,819</b>	<b>136,750</b>	<b>8,090,106</b>
<b>SAND AND WASTE—</b>						
Great Britain.....	1,174	18,925	3,100	53,983	1,863	34,490
United States.....	75,540	892,360	89,652	1,124,031	115,587	1,490,341
Other countries.....	1,237	19,960	2,337	42,056	3,817	67,455
<b>Total.....</b>	<b>77,951</b>	<b>931,245</b>	<b>95,089</b>	<b>1,230,070</b>	<b>121,267</b>	<b>1,592,286</b>
<b>ASBESTOS MANUFACTURES INCLUDING ASBESTOS ROOFING—</b>						
Great Britain.....		2,054		1,007		272
United States.....		61,160		30,272		32,443
British South Africa.....						5,855
France.....		2,631		32		205
New Zealand.....		193		125		31
Other countries.....		6,460		12,696		16,766
<b>Total.....</b>		<b>72,498</b>		<b>44,132</b>		<b>55,572</b>

Table 122.—World's Production of Asbestos, 1913, and 1921-1925

(Long tons)

Country	1913	1921	1922	1923	1924	1925
Canada <sup>1</sup> .....	118,361	82,822	146,166	206,680	201,557	259,275
Southern Rhodesia <sup>2</sup> .....	259	17,437	12,722	18,182	23,340	30,669
Union of South Africa <sup>2</sup> .....	859	4,810	3,919	7,312	6,459	9,078
Australia <sup>2</sup> .....		1,182	741	217	74	51
Cyprus <sup>2</sup> .....	(a) 1,168	(a) 897	2,285	2,151	3,903	3,221
India <sup>2</sup> .....		316	242	247	125	*
China <sup>2</sup> .....		13	(a) 194	(a) 126	125	213
Finland.....		750	772	774	1,207	1,700
Italy <sup>4</sup> .....		413	492	1,513	2,125	2,071
Russia <sup>2</sup> .....	17,218	7,080	5,065	4,801	(a) 8,197	10,000
Spain <sup>2</sup> .....		19	5	*	*	*
United States <sup>3</sup> .....	982	742	60	202	( <sup>5</sup> ) 268	1,123
France <sup>2</sup> .....		500	600	653	*	*
Japan.....			919	369	277	*
<b>Total.....</b>	<b>139,019</b>	<b>116,951</b>	<b>174,182</b>	<b>243,227</b>	<b>247,657</b>	<b>317,401</b>

\*Data not available.

Source—

<sup>1</sup>Dominion Bureau of Statistics, Canada.<sup>2</sup>Imperial Mineral Resources Bureau (to 1921). Later figures from official reports of the different countries.<sup>3</sup>Mineral Resources of United States, 1925.<sup>4</sup>Asbestos.

(a) Exports.

## BARYTES

The production of barytes in 1925 decreased quite considerably from the 1924 output. In 1925 the production amounted to 95 tons valued at \$2,259 as compared with 151 tons valued at \$3,308 in 1924. The total production came from the Johnston mine, Lake Ainslie, Inverness county, Nova Scotia, and was shipped for use in paint manufacture.

Table 123.—Production of Barytes in Canada, 1885-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1885.....	300	1,500	1889.....	720	4,402	1913.....	641	5,410
1886.....	3,864	19,270	1900.....	1,337	7,605	1914.....	612	6,169
1887.....	400	2,400	1901.....	653	3,842	1915.....	550	6,875
1888.....	1,100	3,850	1902.....	1,096	3,957	1916.....	1,368	19,393
1889.....			1903.....	1,163	3,931	1917.....	3,490	54,027
1890.....	1,842	7,543	1904.....	1,382	3,702	1918.....	640	10,165
1891.....			1905.....	3,360	7,500	1919.....	468	8,154
1892.....	315	1,260	1906.....	4,000	12,000	1920.....	751	22,983
1893.....			1907.....	1,344	3,000	1921.....	270	9,567
1894.....	1,081	2,830	1908.....	4,312	19,021	1922.....	289	9,537
1895.....			1909.....	179	1,120	1923.....	409	8,548
1896.....	145	715	1910.....			1924.....	151	3,308
1897.....	571	3,060	1911.....	50	400	1925.....	95	2,259
1898.....	1,125	5,533	1912.....	464	5,104			
						<b>Total.....</b>	<b>40,537</b>	<b>289,940</b>

Table 124.—Production in Canada and Imports of Barytes, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	409	8,548	151	3,308	95	2,259
IMPORTS—						
Barium peroxide.....	60	16,495	37	11,883	31	7,488
Blanc fixe and satin white.....	1,946	68,502	354	21,742	303	19,343
Barytes.....	2,420	53,670	2,323	48,693	2,433	50,566

## BITUMINOUS SANDS

Shipments of bituminous sands from Alberta deposits during 1925 amounted to 1,148 tons, valued at \$4,594. Prior to this year the total production of this commodity was 531 tons, worth \$2,127. Practically all the material shipped to date has been used for demonstration and experimental purposes. Deposits are located in the Fort McMurray district of Alberta. The Scientific and Industrial Research Council of Alberta, the Fort McMurray Asphaltum Co., and the Federal Department of Mines, are actively engaged in research work in connection with these sands.

An excerpt from a statement by Dr. K. A. Clarke, of the *Scientific and Industrial Research Council of Alberta*, follows:—

"During the summer of 1925, the Scientific and Industrial Research Council of Alberta operated a semi-commercial experimental plant for separating the bitumen from the bituminous sands found in Northern Alberta. This plant was located at the Dunvegan Yards at Edmonton. It had a capacity for treating fifteen tons of bituminous sand in a ten-hour day. Approximately five hundred tons of bituminous sand were separated in this plant."

Table 125.—Imports of Asphalt into Canada, 1924 and 1925

	1924		1925	
	Tons	Value	Tons	Value
		\$		\$
Asphalt, solid.....	17,070	283,658	12,583	292,218
Asphalt, not solid.....		10,536		13,288
Asphaltum oil.....		37,794		12,147
<b>Total.....</b>		<b>331,988</b>		<b>317,653</b>

## COAL

**General Review.**—Canada's coal output in 1925 dropped below the total reported in the preceding year, due largely to losses sustained through labour troubles in the maritime provinces in the earlier part of the year. Production amounted to 13,134,968 tons, as compared with 13,638,197 tons mined in 1924. Depression during the first three or four months of the year, always noticeable, carried the output to a lower mark in April than had been reached in several years, but on the other hand, the recovery in 1925 set in earlier than in most other years; from May to November there was an upward trend in the output curve.

Nova Scotia mines, in which the output losses were greatest, produced only 3,842,978 tons of coal in 1925 as compared with a total of 5,557,441 tons in 1924, and yielded first place among the coal-producing provinces to Alberta, its western rival. Distressing conditions prevailed at the Nova Scotia collieries during the earlier months; lack of continuity in employment precipitated labour troubles; strikes and general unrest followed by actual want drove many miners to migrate and created one of the most difficult industrial situations that has occurred in Canada in many years.

Following the provincial election in which the defeat of the party in power was brought about, the coal-mining situation became the chief topic of interest. The new government appointed a Royal Commission giving it wide powers of inquiry; the men returned to work in August on a temporary agreement pending the findings of the Royal Commission, and the output of coal grew steadily until the close of the year.

Western mines made a better showing in 1925 than in the preceding year when labour troubles in District 18 restricted the output. Restoration of coal shipments to Winnipeg and more eastern points marked an advance in marketing over the previous year when much of the advantage won in 1923 was lost. Attempts to ship coal from the western provinces to Ontario in 1925 did not meet with great success; there were some experimental shipments made with a view to determining solid train-load costs of transporting coal from Alberta to Ontario.

Alberta's output of 5,869,031 tons placed that province in the premier position among Canada's coal-producing areas, and marked an increase in output that was very gratifying. In 1924 Alberta mines produced 5,189,729 tons of coal.

British Columbia coal mines operated fairly steadily in the face of considerable difficulties. Fuel oil continues to be a keen competitor with coal produced from the Vancouver Island Mines. In addition, these mines are being affected to some extent by the entry of some coal in the British Columbia markets from the United States, Alberta and Great Britain. In 1925, these mines produced 2,742,252 tons of bituminous coal; in 1924, the output totalled 2,193,667 tons.

New Brunswick contributed 208,012 tons of bituminous coal and Saskatchewan added 471,965 tons of lignite to the total for Canada.

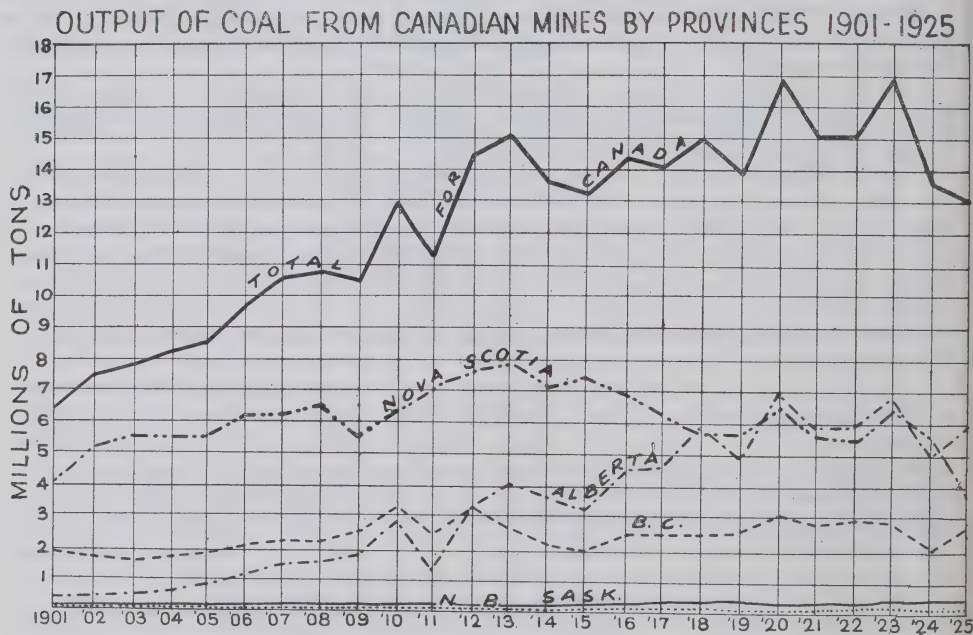
Employment in the coal-mining industry continued uncertain. Owing to labour troubles in Nova Scotia the number of men employed during the months from April to August dropped to a low level. One coal mine strike occurred in the East during the year. In this 11,463 men were involved with a total loss of time amounting to 1,478,727 working days. In Western Canada there were 12 disputes, and while only 4,081 men were affected the total loss of time amounted to 93,132 working days. In all there were 13 strikes in which 15,544 men participated, losing in the aggregate 1,571,859 working days. In the preceding year there were 15 disputes, 21,214 men were affected and the total loss in working time amounted to 1,555,105 days. During 1923, while there were 25 disputes, 20,986 men were affected and the total loss in working time amounted to only 308,430 days. In 1922 the trend in employment in coal mining was much the same as in 1924, the loss of time due to strikes in that year, amounting to 1,222,288 days.

To assist the industry, the Dominion Government made provision for the payment of a subvention of \$150,000 in order that domestic coal, particularly from the Maritime Provinces might be marketed in Central Canada.

Table 126.—Output of Coal from Canadian Mines, 1785-1925

Year	Short tons	Value	Average per ton	Year	Short tons	Value	Average per ton
		\$	\$			\$	\$
1785-1880.....	16,426,253	28,190,518	1.72	1903.....	7,960,364	15,942,833	2.00
1881.....	1,537,106	2,688,621	1.75	1904.....	8,254,595	16,592,231	2.01
1882.....	1,848,148	3,248,446	1.76	1905.....	8,667,948	17,520,263	2.02
1883.....	1,818,684	3,109,635	1.71	1906.....	9,762,601	19,732,019	2.02
1884.....	1,984,959	3,593,831	1.81	1907.....	10,511,426	24,381,842	2.32
1885.....	1,920,977	3,417,807	1.78	1908.....	10,886,311	25,194,573	2.31
1886.....	2,116,653	3,739,840	1.77	1909.....	10,501,475	24,781,236	2.36
1887.....	2,429,330	4,388,206	1.81	1910.....	12,909,152	30,909,779	2.39
1888.....	2,602,552	4,674,140	1.80	1911.....	11,323,388	26,467,646	2.34
1889.....	2,658,303	4,894,287	1.84	1912.....	14,512,829	36,019,044	2.48
1890.....	3,084,682	5,676,247	1.84	1913.....	15,012,178	37,334,940	2.49
1891.....	3,577,749	7,019,425	1.96	1914.....	13,637,529	33,471,801	2.45
1892.....	3,287,745	6,363,757	1.94	1915.....	13,267,023	32,111,182	2.42
1893.....	3,783,499	7,359,080	1.95	1916.....	14,483,395	38,817,481	2.68
1894.....	3,847,070	7,429,468	1.93	1917.....	14,046,759	43,199,831	3.08
1895.....	3,478,344	6,739,153	1.94	1918.....	14,977,926	55,192,896	3.68
1896.....	3,745,716	7,226,462	1.93	1919*	13,919,096	55,622,670	3.99
1897.....	3,786,107	7,303,597	1.93	1920*	16,946,764	82,496,538	4.86
1898.....	4,173,108	8,224,288	1.97	1921*	15,057,493	72,451,656	4.81
1899.....	4,925,051	10,283,497	2.09	1922*	15,157,431	65,518,497	4.32
1900.....	5,777,319	13,742,178	2.38	1923*	16,990,571	72,058,986	4.24
1901.....	6,486,325	12,699,243	1.96	1924*	13,638,197	53,593,988	3.93
1902.....	7,466,681	15,210,877	2.04	1925*	13,134,968	49,261,951	3.75
<b>Total.....</b>				<b>388,321,780 1,105,896,486</b>			

\*The tonnage shown is the total output from all mines. Prior to 1919 the tonnage shown includes only sales, colliery consumption, and coal used by the operators.



**Tonnage Lost.**—Tonnage lost through absenteeism, lack of orders, car shortage, mine disability, and other causes, has been shown in Table 127 for all the coal mines of Canada by provinces during the past three years.

It will be readily understood that in any statement of tonnage lost by operating mines the method of computing the data must be more or less arbitrary. A plan has been worked out by the Bureau which is now being applied in every coal-producing province, and the

following outline of the procedure is given in order that the reader may clearly understand how the data in the "Tonnage Lost" table are obtained.

For each month the actual output and the actual number of days' work done by all employees on the colliery pay-rolls are determined and from these two figures the output per man-day is deduced. The number of individual shifts lost by the men whose names are on the colliery pay-roll for the month is recorded, and the total number of shifts so lost is multiplied by the actual tonnage produced per man-day during the month. This lost tonnage plus the actual output of the mine during the month is regarded as the possible output and the percentages given in the table showing the proportions produced and lost are computed from these figures. The tonnage lost is then analyzed according to the cause of loss and the percentage figures are included in the table.

It is to be noted that this record takes account only of losses incurred during operating periods; no record of tonnage lost is computed in the case of a mine closed down because of a general strike of its employees.

Computed on the foregoing basis the output in 1925 amounted to 75 per cent of the possible production; the losses, or 25 per cent, were due to the following causes: lack of orders, 19.2 per cent; unspecified causes, 2.7 per cent; absenteeism, 1.5 per cent; mine disability, 1.1 per cent; and car shortage, 0.5 per cent. In the preceding calendar year 67 per cent of the possible output was attained and in 1923 a higher record of 74 per cent was reported.

New Brunswick and British Columbia made the best showings in 1925 reporting 86 per cent of their possible outputs. Nova Scotia reported 78 per cent, Alberta 69 per cent, and Saskatchewan 68 per cent.

**Table 127.—Tonnage Lost in the Coal Mines of Canada in 1923, 1924 and 1925 Showing by Provinces the Relative Percentages Produced and Lost with an Analysis of the Percentage Lost.**

Province	Per cent produced	Per cent lost	Percentage lost through				
			Absenteeism	Lack of orders	Car shortage	Mine disability	Other causes
Nova Scotia.....1923	72	28	7.8	9.5	0.8	1.0	8.9
.....1924	65	35	3.2	21.7	0.6	1.5	8.0
.....1925	78	22	2.7	14.6	—	2.1	2.6
New Brunswick.....1923	89	11	8.1	—	0.1	1.0	1.8
.....1924	83	17	3.9	10.5	0.1	0.2	2.3
.....1925	86	14	2.1	8.5	—	0.1	3.3
Saskatchewan.....1923	75	25	0.9	17.8	1.1	1.6	3.6
.....1924	65	35	0.3	32.6	0.2	—	1.9
.....1925	68	32	—	31.0	—	—	1.0
Alberta.....1923	73	27	1.2	18.4	3.2	0.7	3.5
.....1924	66	34	0.6	13.9	0.7	0.5	18.3
.....1925	69	31	0.7	24.7	0.9	0.9	3.8
British Columbia.....1923	81	19	1.9	16.1	0.2	0.1	0.7
.....1924	80	20	1.9	14.4	0.3	0.1	3.3
.....1925	86	14	2.1	10.7	0.4	0.1	0.7
Canada.....1923	74	26	4.0	14.3	1.7	0.8	5.2
.....1924	67	33	2.4	17.9	0.6	0.8	11.3
.....1925	75	25	1.5	19.2	0.5	1.1	2.7

**Disposition.**—In the disposition tables there are records of the distribution of coal mined in Canada during the past two years. In line with the lowered output figures the items in the disposition tables showed less amounts in every case except in the amounts sold to railroads and used in making coke and briquettes which were slightly greater than in 1924. Considerable reductions were made in the amount of coal used about the mines for the generation of power. Lower prices for coal reduced the average value of the total output from \$4.24 per short ton in 1923 to \$3.93 in 1924 with a further reduction to \$3.75 in 1925.

Table 128.—Disposition of Coal from Canadian Mines, 1924 and 1295

(Short tons)

	1924			1925		
	Total coal	Total value	Average value per ton	Total coal	Total value	Average value per ton
Supplied to employees for domestic consumption.....	212,422	\$ 675,935	3.18	163,713	\$ 564,855	3.34
Used for power purposes—						
(a) Shops.....	5,590	21,296	3.81	3,741	13,704	3.66
(b) Colliery boilers.....	845,830	2,676,622	3.16	791,209	2,288,501	2.89
(c) Companies' railroads.....	67,281	269,177	4.00	51,634	193,743	3.75
(d) Harbour tugs and dredges.....	1,311	5,770	4.40	846	2,730	3.22
Shipped. (See Table 131)—						
(a) Ships' bunkers.....	600,587			429,362		
(b) Railroads.....	2,865,911	49,685,456	4.10	3,463,194	45,767,482	3.89
(c) Other.....	3,649,905			7,862,183		
Used in making coke at the colliery.....	53,767	271,722	5.05	139,589	500,460	3.58
Used in making briquettes.....				729	2,991	4.10
Put on bank.....	892,278	3,145,490	3.53	511,514	1,819,862	3.55
Put on waste heap.....	277,212	6,710	0.02	262,087	768	0.003
<b>Total Disposition.....</b>	<b>14,472,094</b>	<b>56,758,178</b>	<b>3.92</b>	<b>13,684,801</b>	<b>51,155,096</b>	<b>3.73</b>
Lifted from bank.....	833,897	3,164,190	3.79	549,833	1,893,145	3.44
<b>Total Output.....</b>	<b>13,638,197</b>	<b>53,593,988</b>	<b>3.93</b>	<b>13,134,968</b>	<b>49,261,951</b>	<b>3.75</b>

Table 129.—Disposition of Coal from Canadian Mines by Provinces, 1924

(Short tons)

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
Supplied to employees for domestic consumption.....	124,511	3,010	3,972	54,095	26,834		212,422
Coal shipped (See Table 131).....	4,870,471	211,245	448,769	4,851,273	1,734,144	501	12,116,403
Used under colliery boilers, etc.....	453,172	3,346	20,811	196,548	166,933	20	845,830
Used by company's railroads.....	44,645		3,329	5,299	14,005		67,281
Used for manufacture of coke at colliery.....					53,767		53,767
Used in shops, etc.....	5,590						5,590
Used by harbour tugs and dredges.....	1,311						1,311
Put on bank.....	729,760	11,957	2,414	59,671	88,476		892,278
Put on waste heap.....	6,267	73	2,394	74,245	193,633	600	277,212
<b>Total Disposition.....</b>	<b>6,240,730</b>	<b>229,631</b>	<b>481,689</b>	<b>5,241,131</b>	<b>2,277,792</b>	<b>1,121</b>	<b>14,472,094</b>
Lifted from bank.....	683,289	12,510	2,571	51,402	84,125		833,897
<b>Total Output.....</b>	<b>5,557,441</b>	<b>217,121</b>	<b>479,118</b>	<b>5,189,729</b>	<b>2,193,667</b>	<b>1,121</b>	<b>13,638,197</b>

Table 130.—Disposition of Coal from Canadian Mines, by Provinces, 1925

(Short tons)

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
Supplied to employees for domestic consumption.....	91,873	3,040	3,653	46,730	23,411	6	165,713
Coal shipped (See Table 131).....	3,418,173	202,179	440,252	5,518,734	2,174,764	637	11,754,739
Used under colliery boilers.....	341,947	2,812	20,105	226,177	200,141	27	791,209
Used by companies' railroads.....	29,369		3,421	6,427	12,417		51,634
Used for manufacture of coke at colliery.....					139,589		139,589
Used in making briquettes.....				729			729
Used in shops, etc.....	3,741						3,741
Used by harbour tugs and dredges.....	846						846
Put on bank.....	340,411	7,834	1,982	55,969	105,318		511,514
Put on waste heap.....	6,747	54	4,605	72,864	177,757	60	262,087
<b>Total Disposition.....</b>	<b>4,233,107</b>	<b>215,919</b>	<b>474,018</b>	<b>5,927,630</b>	<b>2,833,397</b>	<b>730</b>	<b>13,684,801</b>
Lifted from bank.....	390,129	7,907	2,053	58,599	91,145		549,833
<b>Total Output.....</b>	<b>3,842,978</b>	<b>208,012</b>	<b>471,965</b>	<b>5,869,031</b>	<b>2,742,252</b>	<b>730</b>	<b>13,134,968</b>

**Shipments.**—Shipments of coal from Canadian mines during 1925 totalled 11,754,739 short tons, a drop of 0.36 million tons from the total for 1924. Domestic shipments amounted to 7,430,148 tons; railroads and ships' bunkers took 3,892,556 tons and exports to other countries direct from the mines totalled 432,035 tons. About 40 per cent of the coal shipped was run-of-mine; 45 per cent was screened and the balance was slack. Of the shipments to Canadian points, 20 per cent was classed as run-of-mine, 58 per cent screened and the balance slack. Railroad coal and coal for ship's bunkers included 80 per cent run-of-mine, 16 per cent screened and 4 per cent slack. Shipments to points outside of Canada consisted largely of screened coal. Most of the coal shipped direct from the mines to points outside of Canada went to the United States and Newfoundland.

As reported in Table 141, the total consumption of coal by railroad locomotives in Canada in the year under review amounted to 8,822,778 tons including only 12,809 tons of anthracite. Shipments of coal from Canadian mines for railroad use totalled 3,463,194 tons. In 1924, when the railroads used 9,015,516 tons of coal, Canadian coal mines' shipments to railroads totalled 2,865,911 tons.

What may appear to some to be a discrepancy between the figures shown for coal exported directly from the mines, and the records of coal exported from Canada as reported by the *Department of National Revenue*, is due largely to the fact that brokers and other dealers purchase considerable quantities of coal from Canadian mine operators and then dispose of their purchases in the foreign market. Thus, some of the coal reported by the operator as sold by him for delivery to Canadian points may be subsequently exported and so be included in the Customs' records. There is also a difference between the time of shipment and the time of clearing through Customs, so that the tonnage of coal in transit appears in the one record but is excluded from the other.

Analysis of the shipment table shows that approximately 63 per cent of the total coal shipped from Canadian mines in 1925 went to Canadian consumers. In 1924, about 67 per cent of the total coal shipped was used by Canadian consumers. Shipments from the mines to Canadian points in 1925 were about 740,712 tons less than in the preceding year. Supplies for railroads and ships' bunkers increased 426,058 tons over the total for the preceding year and foreign shipments declined 47,010 tons from the tonnage reported in 1924.

**Table 131.—Shipments of Coal from Canadian Mines by Grades and Destinations, 1924 and 1925**

(Short tons)

Destination	1924				1925			
	Run-of mine	Screened	Slack	Total	Run-of mine	Screened	Slack	Total
Prince Edward Island.....	7,053	57,780	509	65,342	4,921	51,310	633	56,864
Nova Scotia.....	290,535	493,627	570,571	1,354,733	435,378	465,148	381,480	1,282,006
New Brunswick.....	300,948	219,423	88,499	608,870	238,132	197,807	73,854	509,793
Quebec.....	1,225,932	60,994	367,841	1,655,767	68,987	369,408	373,419	811,764
Ontario.....	2,740	18,326	7,011	28,077	765	31,285	743	32,793
Manitoba.....	153,880	510,380	73,817	1,438,077	142,724	515,274	86,571	1,164,569
Saskatchewan.....	247,819	1,051,886	120,237	1,419,942	218,545	1,185,712	116,921	1,521,178
Alberta.....	253,618	854,974	285,256	1,393,848	260,181	873,849	309,289	1,443,319
British Columbia.....	67,052	595,102	243,579	905,733	122,476	657,085	247,664	1,027,225
Yukon.....		501		501		335	302	637
<b>Total domestic shipments</b>	<b>2,550,547</b>	<b>3,862,993</b>	<b>1,757,320</b>	<b>8,170,860</b>	<b>1,492,059</b>	<b>4,347,213</b>	<b>1,590,876</b>	<b>7,430,148</b>
Railroads.....	2,499,159	237,284	159,468	2,895,911	2,969,508	360,054	133,632	3,463,194
Ships' bunker.....	268,468	324,539	7,580	600,587	161,711	260,457	7,194	429,362
<b>Total railroads and ships' bunkers</b>	<b>2,737,627</b>	<b>561,823</b>	<b>167,048</b>	<b>3,466,498</b>	<b>3,131,219</b>	<b>620,511</b>	<b>140,826</b>	<b>3,892,556</b>
United States.....	29,627	156,913	38,481	225,021	41,332	165,285	33,362	239,979
Newfoundland.....	102,619	139,210	12	241,841	29,384	148,143	9,834	187,361
West Indies.....	81			81				
Other places.....	3,601	7,605		11,206	1,463	3,232		4,695
Lost at sea.....	896			896				
<b>Total foreign shipments</b>	<b>136,824</b>	<b>303,728</b>	<b>38,493</b>	<b>479,045</b>	<b>72,179</b>	<b>316,660</b>	<b>43,196</b>	<b>432,035</b>
<b>Total</b>	<b>5,424,998</b>	<b>4,728,544</b>	<b>1,962,861</b>	<b>12,116,403</b>	<b>4,695,457</b>	<b>5,284,384</b>	<b>1,774,898</b>	<b>11,754,739</b>

**Imports.**—Data regarding imports of anthracite and bituminous coal into Canada are supplied to the Bureau twice a month by the *Department of National Revenue*. The figures show for each custom port of entry the total quantity of each kind of coal imported during the period. These data are not comparable with the imports statistics published in the *Monthly Report on the Trade of Canada*, which report shows only the quantity of coal actually cleared from Customs for consumption in Canada. It often happens that large quantities of bituminous coal are brought into Canada but are not cleared from Customs until required for use, owing to the duty of 50 cents per ton collected on all bituminous coal, imported,

Canada's great central area comprising Ontario and Quebec provides a very considerable market for United States producers of anthracite coal which is largely used for domestic purposes in central Canada and for bituminous coals used in industrial establishments. So far these two provinces have been largely dependent upon United States producers for their supply of fuel though in recent years increasing quantities of coal have been imported from Great Britain and attempts have been made to extend the use of Canadian coals. Imports of anthracite coal in 1925 totalled 3,798,744 tons including 3,249,497 tons of United States anthracite and 549,247 tons from Great Britain. This total was 384,850 tons lower than the recorded figures for the preceding calendar year and 1,369,137 tons lower than the imports for 1923, but imports in 1923 were above normal owing to the fact that the supply in 1922 had been curtailed by labour troubles. Imports of coal from Great Britain have reached appreciable tonnages in the past three years. Coal obtained from this source in 1925 totalled 606,069 tons, comprising 549,247 tons of anthracite and 56,822 tons of bituminous. In 1922, Canada purchased 179,708 tons of anthracite from Great Britain; in 1923 the total rose to 261,659 tons and in 1924 anthracite importations amounted to 275,277 tons. Most of this coal was burned in eastern and central Canada.

Imports of anthracite from the United States which amounted to 2.5 million tons in 1922 rose to a total of 4.9 million tons in the following year, receded to 3.9 million tons in 1924 and decreased further to 3.2 million tons in 1925. There was an increase in the imports of bituminous coal into Canada during 1925, when 13,033,692 tons were imported as compared with a total of 12,644,984 tons in 1924.

There has been a decided drop in the average value per ton of the bituminous coal imported into Canada in the past five years. In 1921, the total imports into Canada of bituminous coal entered for consumption amounted to 13,748,242 tons valued at \$48,631,095, or an average of \$3.53 a ton; in 1924, the corresponding totals were 12,546,214 tons and \$29,628,643 making an average value of \$2.36 per short ton, and in 1925, the total bituminous imports were 12,548,460 tons worth \$26,974,340, or an average of \$2.15 per ton.

A chart showing the principal coal-importing areas in central Canada has been prepared from carefully collected information. Coal imported through any of the ports listed in the accompanying key is very rarely distributed outside the boundaries of the area in which that port occurs.

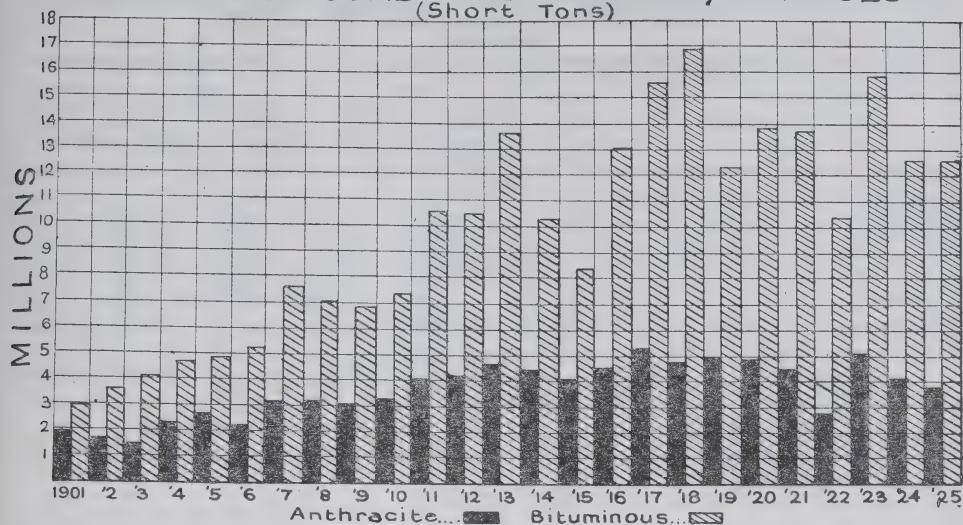
IMPORTS OF COAL INTO CANADA, 1901-1925  
(Short Tons)

Table 132.—Imports of Coal into Canada from Great Britain, by Kinds and Grades and by Provinces, 1924 and 1925

(Short tons)

Destination	1924				1925		
	Anthracite		Bituminous		Anthracite		Bituminous
	Egg, nut, etc.	Dust	Round and run-of-mine	Slack	Egg, nut, etc.	Dust	All grades*
Prince Edward Island.....					507		13,436
Nova Scotia.....	12,461		246		20,679		19
New Brunswick.....	25,579		15		29,256		5,103
Quebec.....	229,142		18,708	21,134	474,390	3,833	38,264
Ontario.....	6,251	1,844			20,564		
British Columbia.....			(a) 1,793		18		(a) 763
<b>Canada.....</b>	<b>273,433</b>	<b>1,844</b>	<b>(b) 20,762</b>	<b>21,134</b>	<b>545,414</b>	<b>3,833</b>	<b>(c) 57,585</b>

\*Owing to tariff change in 1925 classification by grades not recorded.

(a) Imported from other countries.

(b) Includes 1,793 tons imported from other countries.

(c) Includes 736 tons imported from other countries.

Table 133.—Imports of Anthracite Coal into Canada from United States by Kinds and Grades and by Provinces, 1923, 1924 and 1925

(Short tons)

Destination	1923		1924		1925	
	Egg, nut, etc.	Dust	Egg, nut, etc.	Dust	Egg, nut, etc.	Dust
Prince Edward Island.....	4,303		3,571		4,624	
Nova Scotia.....	35,169		37,616		33,393	
New Brunswick.....	54,291	265	58,681	251	45,010	653
Quebec.....	1,359,735	251,616	933,390	157,181	764,295	132,651
Ontario.....	2,999,919	142,603	2,615,685	65,310	2,149,016	84,469
Manitoba.....	54,290	1,566	30,324	3,898	28,182	6,214
Saskatchewan.....	2,125	166	1,687	33	702	
Alberta.....					30	
British Columbia.....	174		687		228	
<b>Canada.....</b>	<b>4,510,006</b>	<b>396,216</b>	<b>3,681,644</b>	<b>226,673</b>	<b>3,025,480</b>	<b>224,017</b>

**Table 134.—Imports of Bituminous Coal into Canada from United States by Kinds and Grades and by Provinces, 1923, 1924 and 1925**  
(Short tons)

Destination	1923		1924		1925*
	Round and run-of-mine	Slack	Round and run-of-mine	Slack	All grades
Prince Edward Island.....	1,263		3,597		9,208
Nova Scotia.....	26,340	18,086	60,209	6,959	(d) 178,995
New Brunswick.....	50,882	27,960	42,657	29,880	163,982
Quebec.....	2,187,348	738,643	993,281	532,235	2,530,661
Ontario.....	11,048,490	3,019,512	8,138,908	2,598,940	9,884,710
Manitoba.....	34,328	77,806	43,384	100,225	147,758
Saskatchewan.....	421	1,186	(b) 1,028	1,533	1,732
Alberta.....	564	546	826	383	1,175
British Columbia.....	(a) 14,075	6,174	(c) 33,714	15,305	(e) 57,881
Yukon.....	5		24		4
<b>Canada.....</b>	<b>13,363,716</b>	<b>3,886,913</b>	<b>9,317,628</b>	<b>3,285,460</b>	<b>12,976,106</b>

(a) Includes 2,331 tons lignite coal.

(b) Includes 139 tons lignite coal.

(c) Includes 25,763 tons lignite coal.

(d) Includes 10 tons lignite coal.

(e) Includes 18,358 tons lignite coal.

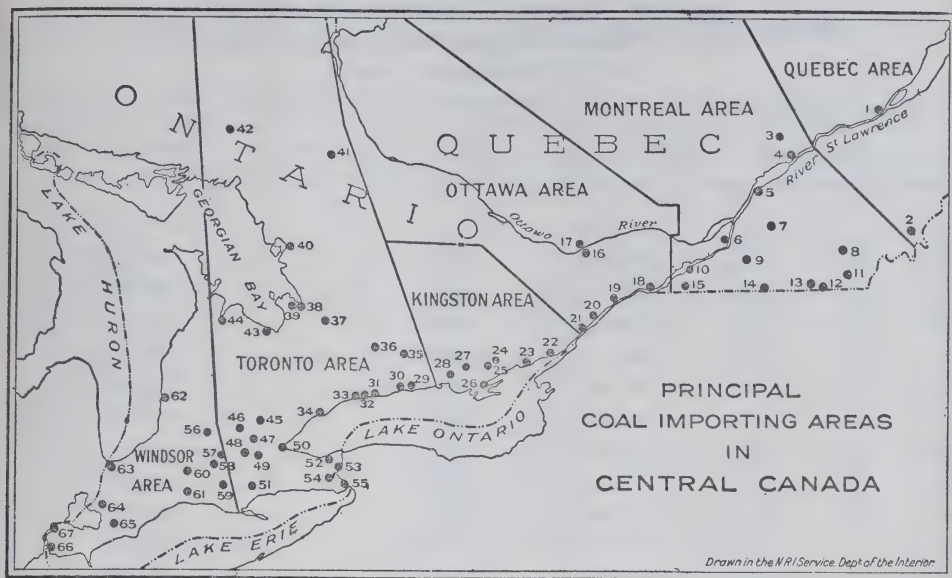
\* Owing to tariff change in 1925 classification by grades not recorded.

**Table 135.—Average Imports of Coal into Canada by Kinds and Grades and by Provinces for the Five Years 1921-1925**  
(Short tons)

Destination	Anthracite			Bituminous	Total
	Egg, nut, etc.	Dust	Total	All grades	
Prince Edward Island.....	4,848		4,848	5,819	<b>10,667</b>
Nova Scotia.....	49,420	19	49,439	62,020	<b>111,459</b>
New Brunswick.....	78,157	240	78,397	93,244	<b>171,641</b>
Quebec.....	1,180,314	172,679	1,352,993	2,381,120	<b>3,734,113</b>
Central Ontario.....	2,371,910	80,401	2,452,311	9,175,555	<b>11,627,866</b>
Head of Lakes.....	106,576	1,630	108,206	1,795,411	<b>1,903,617</b>
<b>Total Ontario.....</b>	<b>2,478,486</b>	<b>82,031</b>	<b>2,560,517</b>	<b>10,970,966</b>	<b>13,531,483</b>
Manitoba.....	30,899	3,633	34,532	111,036	<b>145,568</b>
<b>Manitoba and Head of Lakes.....</b>	<b>137,475</b>	<b>5,263</b>	<b>142,738</b>	<b>1,906,447</b>	<b>2,049,185</b>
Saskatchewan.....	976	64	1,040	1,902	<b>2,942</b>
Alberta.....	19		19	1,294	<b>1,313</b>
British Columbia.....	523	1	524	32,151	<b>32,675</b>
Yukon.....				14	<b>14</b>
<b>Canada.....</b>	<b>3,823,642</b>	<b>258,667</b>	<b>4,082,309</b>	<b>13,659,566</b>	<b>17,741,875</b>

**Table 136.—Average Imports of Coal into Central Canada by Principal Areas for the Five Years 1921-1925**  
(Short tons)

Area	Anthracite			Total bituminous	Total all grades
	Egg, nut, etc.	Dust	Total		
Quebec.....	88,938	1,595	90,533	237,867	328,400
Montreal.....	1,078,914	169,750	1,248,664	2,088,712	3,337,376
Ottawa.....	255,744	19,543	275,287	792,129	977,416
Kingston.....	108,820	1,157	109,977	192,752	302,729
Toronto.....	1,692,896	55,609	1,748,505	4,844,195	6,592,700
Windsor.....	310,107	5,190	315,297	2,562,186	2,877,483
<b>Total.....</b>	<b>3,535,419</b>	<b>252,844</b>	<b>3,788,263</b>	<b>10,627,841</b>	<b>14,416,104</b>



*Drawn in the N.R.I. Service, Dept. of the Interior*

### Key to the Ports of Entry Shown on the Map

QUEBEC AREA—		OTTAWA AREA—		TORONTO AREA—Con.		TORONTO AREA—Con.	
1	Quebec City	16	Ottawa	32	Oshawa	51	Simcoe
2	Megantic	17	Hull	33	Whitby	52	St. Catharines
MONTREAL AREA—		18	Cornwall	34	Toronto	53	Niagara Falls
3	Shawinigan Falls	19	Morrisburg	35	Peterboro	54	Welland
4	Three Rivers	20	Prescott	36	Lindsay	55	Bridgeburg
5	Sorel	21	Brockville	37	Orillia	WINDSOR AREA—	
6	Montreal	KINGSTON AREA—		38	Port McNicoll	56	Stratford
7	St. Hyacinthe	22	Gananoque	39	Midland	57	Woodstock
8	Sherbrooke	23	Kingston	40	Perry Sound	58	Ingersoll
9	St. John's	24	Napanee	41	North Bay	59	Tillsonburg
10	Valleyfield	25	Deseronto	42	Sudbury	60	London
11	Coaticook	26	Pictou	43	Collingwood	61	St. Thomas
12	Beebe Junction	27	Belleville	44	Owen Sound	62	Goderich
13	Mansonsville	28	Trenton	45	Guelph	63	Sarnia
14	St. Armand	TORONTO AREA—		46	Kitchener	64	Wallaceburg
15	Athelstan	29	Cobourg	47	Galt	65	Chatham
		30	Port Hope	48	Paris	66	Amherstburg
		31	Bowmanville	49	Brantford	67	Windsor
				50	Hamilton		

**Exports.**—Exports of Canadian coal amounting to 785,910 tons in 1925 were only slightly higher than the total of 773,246 tons recorded in 1924. In previous years, about equal quantities of coal were exported from eastern Canada and from western Canada while in 1925 exportations from the eastern mines amounted to 266,052 tons and from the western collieries, 519,858 tons. Three tables have been prepared on this subject. An historical table showing the tonnages of Canadian coal exported since 1873 has been included in this report. Then, as in previous years, tables showing the exports of coal from eastern and western Canada and exports of Canadian coal by destination in each of the past three years have been prepared. Records of the exports of coal from Canada are supplied twice-a-month to the Bureau by the *Department of National Revenue* and while the coal operators show on their monthly reports the quantity of coal sold for export, the data given in this report on coal exported from Canada are all compiled from Customs' figures. The coal reported by operators as having been sold for export is shown in the tables of "Shipments". In reporting the exports of Canadian coal, it has been found advisable not to show the data by provinces as the Customs' records show the total quantity of coal exported from Canada through each port of exit without regard to the origin of the coal. For example, practically all the Alberta coal sold for export is usually cleared through the ports of Fernie and Cranbrook in British Columbia. Similarly, Nova Scotia coal is sometimes exported through New Brunswick ports. In the table showing the exports of coal by destination, the extent of Canada's foreign markets for coal is shown in detail.

Table 137.—Exports of Canadian Coal, 1873-1925

(Compiled in the *External Trade Branch*)

(Short tons)

Calendar year	Short tons	Value	Calendar year	Short tons	Value
		\$			\$
1873.....	420,683		1900.....	1,787,777	
1874.....	310,988		1901.....	1,573,661	
1875.....	250,348		1902.....	2,090,288	
1876.....	248,638		1903.....	1,954,629	
1877.....	301,317		1904.....	1,557,412	
1878.....	327,959		1905.....	1,635,287	
1879.....	306,648		1906.....	1,835,041	
1880.....	432,188		1907.....	1,894,074	
1881.....	395,382		1908.....	1,729,833	
1882.....	412,682		1909.....	1,588,099	
1883.....	486,811		1910.....	2,377,049	
1884.....	474,405		1911.....	1,500,639	
1885.....	427,937		1912.....	2,127,133	
1886.....	520,703		1913.....	1,562,020	3,951,351
1887.....	580,965		1914.....	1,423,126	3,780,175
1888.....	588,627		1915.....	1,766,543	5,406,058
1889.....	665,315		1916.....	2,135,359	7,099,387
1890.....	724,486		1917.....	1,733,156	7,387,192
1891.....	971,259		1918.....	1,817,195	9,405,423
1892.....	823,733		1919.....	2,070,050	12,438,885
1893.....	960,312		1920.....	2,558,174	18,014,899
1894.....	1,103,694		1921.....	1,987,251	13,896,370
1895.....	1,011,235		1922.....	1,818,582	11,159,060
1896.....	1,106,661		1923.....	1,654,406	10,661,399
1897.....	986,130		1924.....	773,246	4,836,848
1898.....	1,150,029		1925.....	785,910	4,329,173
1899.....	1,293,169				

Table 138.—Exports of Canadian Coal from Eastern and Western Canada, 1923-1925

(Short tons)

	1923	1924	1925
Eastern Canada.....	796,015	381,331	266,052
Western Canada.....	858,391	391,915	519,858
<b>Total.....</b>	<b>1,654,406</b>	<b>773,246</b>	<b>785,910</b>

Table 139.—Exports of Canadian Coal by Destination, 1923-1925

(Compiled in the *External Trade Branch*)

(Short tons)

Destination	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$
United Kingdom.....	65,260	489,759	21,335	153,912	23,224	172,138
Irish Free State.....				1,788		10,325
British South Africa.....	668	4,676		3,289		46,159
British West Africa.....				2,903		
Bermuda.....	9,972	78,432	10,511	67,862	4,182	30,321
British Guiana.....	21,029	177,307	3,837	32,309	4,651	38,110
British West Indies—						
Barbados.....	1,858	13,176	4,287	24,650	651	5,371
Jamaica.....	745	6,155				
Other B.W.I.....	749	6,817	649	5,354	8,451	50,712
Egypt and Sudan.....					351	2,913
Gibraltar.....	4,509	31,566	5,411	34,179	2,197	13,185
Malta.....	450	3,150				
Newfoundland.....	258,294	1,760,537	248,140	1,457,872	183,245	1,071,624
Australia.....	18,645	150,476	12,415	97,666	13,688	117,653
Fiji.....	1,417	11,761				
New Zealand.....	3,537	24,174	978	8,117	6,127	36,762
<b>Total British Empire.....</b>	<b>387,133</b>	<b>2,757,986</b>	<b>315,543</b>	<b>1,931,199</b>	<b>256,191</b>	<b>1,595,273</b>
Argentina.....			675	4,053		
Belgium.....	1,913	13,787	1,528	9,904	2,707	16,627
China.....	6,682	53,423	3,160	21,158		
Cuba.....	1,178	10,205	378	3,142	1,073	6,638
Denmark.....	381	2,667	1,362	9,335	1,197	7,309
France.....	12,097	92,677	9,751	67,745	525	3,467
French Possessions—						
French Africa.....	265	1,855	737	4,422	296	1,776
French West Indies.....			439	2,784		
St. Pierre and Miquelon.....	12,366	86,428	7,047	45,511	5,239	31,069
Germany.....	308	2,849	1,538	9,231	1,508	9,048
Greece.....	914	6,398	6,098	37,154		
Italy.....	10,427	73,625	14,985	92,342	4,566	27,396
Japan.....	18,413	146,651	40,047	309,546	6,325	42,986
Mexico.....					5,500	45,650
Netherlands.....	71,966	450,849	14,862	90,132	1,081	6,486
Norway.....	3,811	20,677	405	2,430		
Panama.....	683	4,610	1,551	9,306	4,238	35,024
Portugal.....	416	2,912				
Azores and Madeira.....					231	1,383
Portuguese Africa.....					1,209	10,035
Russia.....	396	3,649				
Spain.....					234	1,401
Sweden.....	240	1,680	2,560	15,390		
United States.....	1,072,011	6,486,977	308,448	1,853,991	451,082	2,148,933
Alaska.....	31,162	255,834	22,585	160,473	30,728	237,673
Philippines.....	21,644	179,662	19,547	157,300	11,950	100,999
<b>Total foreign countries.....</b>	<b>1,267,273</b>	<b>7,903,413</b>	<b>457,703</b>	<b>2,905,349</b>	<b>529,719</b>	<b>2,733,900</b>
<b>Grand total.....</b>	<b>1,654,406</b>	<b>10,661,399</b>	<b>773,246</b>	<b>4,836,548</b>	<b>785,910</b>	<b>4,329,173</b>

**Consumption.**—Summary statistics have been prepared in the following tables to show the output, exports, interprovincial shipments, imports and coal made available for consumption in Canada by provinces in each of the past five years.

In these tables the output figures are those reported by the companies operating producing mines; data on interprovincial shipments were compiled from the monthly statements sent in by the coal operators; import and export items were assembled from data supplied by the quantity of coal imported during the year which is a different sum from the coal imported and *Department of National Revenue*, and in the case of imports the figures given show the total cleared through Customs for consumption. In these tables, also, the tonnage of imported coal dumped at the ports of Fort William and Port Arthur has been included with the quantities cleared from Customs in the ports of Manitoba since most of the coal unloaded at the Canadian ports at the head of the lakes finds its way westward to points in Manitoba.

From the tables, it appears that in 1925 Canada produced 13.13 million tons, exported 0.79 million tons, imported from the United States 16.23 million tons and from Great Britain 0.61 million tons and thus had available for consumption a total of 29.18 million tons of coal, including 3.80 million tons of anthracite, 21.17 million tons of bituminous, 0.57 million tons of sub-bituminous coal and 3.64 million tons of lignite. Perusal of the table on the annual consumption of coal following the summary tables shows that Canada actually used 28.46 million tons of coal during the year or an average of 3.039 tons per capita. The consumption of coal by locomotives has been compiled from the records of the *Transportation Branch*.

Table 140.—Annual Consumption of Coal in Canada, 1903-1925

Calendar year	Canadian †		Imported coal "entered for consumption"				Total Short tons	Per capital
			From U.S.A.	From Great Britain	Total*			
	Short tons	%	Short tons	Short tons	Short tons	%		
1903.....	6,005,735	47.3	6,520,931	184,593	6,678,450	52.7	12,684,185	2.212
1904.....	6,697,183	47.9	7,238,869	85,687	7,297,482	52.1	13,994,665	2.412
1905.....	7,032,661	49.4	7,233,738	68,500	7,215,446	50.6	14,249,107	2.341
1906.....	7,927,560	50.5	7,787,338	67,014	7,758,325	49.5	15,685,885	2.481
1907.....	8,617,352	45.0	10,588,697	54,325	10,549,503	55.0	19,166,855	2.947
1908.....	9,156,478	47.3	10,203,335	97,514	10,195,424	52.7	19,351,902	2.820
1909.....	8,913,376	47.9	9,805,253	67,671	9,711,826	52.1	18,625,202	2.682
1910.....	10,532,103	50.2	10,545,441	51,541	10,438,123	49.8	20,970,226	2.960
1911.....	9,822,749	40.5	14,510,129	48,963	14,424,949	59.5	24,247,698	3.365
1912.....	12,385,696	46.0	14,557,124	38,668	14,549,104	54.0	26,934,800	3.657
1913.....	13,450,158	42.6	18,145,769	37,825	18,132,387	57.4	31,582,545	4.196
1914.....	12,214,403	45.5	14,687,852	33,101	14,637,920	54.5	26,852,323	3.490
1915.....	11,500,480	48.1	12,450,796	15,098	12,406,212	51.9	23,906,692	3.041
1916.....	12,348,036	41.3	17,576,202	4,401	17,517,820	58.7	29,865,856	3.717
1917.....	12,313,603	37.2	20,848,009	9,451	20,810,132	62.8	33,123,735	4.049
1918.....	13,160,731	37.8	21,674,826	3,761	21,611,101	62.2	34,771,832	4.175
1919.....	11,611,168	40.3	17,292,913	344	17,236,269	59.7	28,847,437	3.402
1920.....	14,025,566	42.9	18,752,981	.....	18,668,741	57.1	32,694,307	3.788
1921.....	12,715,734	41.0	18,300,081	1,591	18,258,387	58.9	30,974,121	3.524
1922.....	13,044,352	50.2	12,955,555	765,980	12,962,189	49.8	26,006,541	2.909
1923.....	15,070,962	41.8	20,417,239	572,570	20,967,971	58.2	36,038,933	3.968
1924.....	12,529,358	42.8	16,405,344	317,112	16,714,143	57.2	29,243,501	3.170
1925.....	12,125,290	42.6	15,744,957	604,117	16,331,971	57.4	28,457,261	3.039

† The sum of Canadian coal mine sales, colliery consumption, coal supplied to employees, and coal used in making coke, etc., less the tonnage of coal exported.

\* Includes small tonnages from countries other than Great Britain and United States and deductions have been made to take account of foreign coal re-exported from Canada.

Table 141.—Annual Consumption of Coal by Railroad Locomotives in Canada, 1915-1925

(Compiled in the *Transportation Branch*)

Year	Anthracite		Bituminous		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$
Year ended June 30, 1915.....	3,691	.....	6,673,845	.....	6,677,536	.....
“ “ 30, 1916.....	4,899	.....	8,672,455	.....	8,677,354	.....
“ “ 30, 1917.....	4,900	.....	9,783,524	.....	9,788,424	.....
“ “ 30, 1918.....	3,283	.....	9,836,623	.....	9,839,906	.....
“ “ 30, 1919.....	4,430	.....	9,136,593	.....	9,141,023	.....
Calendar Year, 1920.....	4,270	.....	10,372,687	.....	10,376,957	.....
“ “ 1921.....	9,681	.....	8,784,607	.....	8,794,288	.....
“ “ 1922.....	8,721	70,523	9,032,366	57,636,011	9,041,087	57,706,534
“ “ 1923.....	15,184	97,243	9,925,792	58,489,294	9,940,976	58,586,537
“ “ 1924.....	12,400	69,496	9,003,116	49,592,428	9,015,516	49,661,924
“ “ 1925.....	12,809	61,066	8,809,969	44,954,692	8,822,778	45,015,758

Table 142.—Summary Statistics for 1925—Output, Exports, Interprovincial Shipments, Imports and Coal made Available for Consumption in Canada, by Provinces

(Short tons)

Province	Canadian coal				Imported from U.S.A.	Imported from Great Britain	Coal available for consumption
	Output	Received from other provinces	Shipped to other provinces	Exported			
<b>PRINCE EDWARD ISLAND—</b>							
Anthracite.....					4,624	507	5,131
Bituminous.....		56,864			9,208	13,436	79,508
Total.....		56,864			13,832	13,943	84,639
<b>NOVA SCOTIA—</b>							
Anthracite.....					33,393	20,679	54,072
Bituminous.....	3,842,978		1,215,959	240,539	178,985	19	2,565,484
Lignite.....					10		10
Total.....	3,842,978		1,215,959	240,539	212,388	20,698	2,619,566
<b>NEW BRUNSWICK—</b>							
Anthracite.....					45,693	29,256	74,949
Bituminous.....	208,012	348,389	4,568	25,502	163,982	5,103	695,416
Total.....	208,012	348,389	4,568	25,502	209,675	34,359	770,365
<b>QUEBEC—</b>							
Anthracite.....					896,946	478,223	1,375,169
Bituminous.....		811,764		11	2,530,661	38,264	3,380,678
Total.....		811,764		11	3,427,607	516,487	4,755,847
<b>CENTRAL ONTARIO—</b>							
Anthracite.....					2,182,717	20,564	2,203,281
Bituminous.....		3,510			9,100,462		9,103,972
Lignite.....		*26,483					*26,483
Sub-bituminous.....		* 2,800					*2,800
Total.....		32,793			11,283,179	20,564	11,336,536
<b>MANITOBA AND HEAD OF LAKES—</b>							
Anthracite.....					85,164		85,164
Bituminous.....		24,548		3,971	932,006		952,583
Lignite.....		635,715					635,715
Sub-bituminous.....		84,306					84,306
Total.....		744,569		3,971	1,017,170		1,757,768
<b>SASKATCHEWAN—</b>							
Anthracite.....					702		702
Bituminous.....		93,342		7,418	1,732		87,656
Lignite.....	471,965	1,180,128	230,811				1,421,282
Sub-bituminous.....		63,187					63,187
Total.....	471,965	1,336,657	230,811	7,418	2,434		1,572,827
<b>ALBERTA—</b>							
Anthracite.....					30		30
Bituminous.....	2,145,635	34,425	108,163	926	1,175		2,072,146
Lignite.....	3,152,742	128	1,683,168				1,469,702
Sub-bituminous.....	570,654		165,408				405,246
Total.....	5,869,031	34,553	1,956,739	926	1,205		3,947,124
<b>BRITISH COLUMBIA—</b>							
Anthracite.....					228	18	246
Bituminous.....	2,742,252	34,362	78,514	507,543	39,550	(a) 736	2,230,843
Lignite.....		71,525			18,358		89,883
Sub-bituminous.....		15,115					15,115
Total.....	2,742,252	121,002	78,514	507,543	58,136	754	2,336,087
<b>YUKON—</b>							
Anthracite.....							
Bituminous.....	730				4		734
Total.....	730				4		734
<b>CANADA—</b>							
Anthracite.....					3,249,497	549,247	3,798,744
Bituminous.....	8,929,607	1,407,204	1,407,204	785,910	12,957,738 (a)	57,585	21,169,020
Lignite.....	3,624,707	1,913,979	1,913,979		18,368		3,643,075
Sub-bituminous.....	570,654	165,408	165,408				570,654
Total.....	13,134,968	3,486,591	3,486,591	785,910	16,225,603	606,832	29,181,493

\*Includes all coal shipped to any point in Ontario from Western Mines.

(a) Includes 736 tons imported from other countries.

Table 143.—World's Production of Coal<sup>1</sup>, 1922-1925

(In metric tons)

Country	1922	1923	1924	1925
<b>North America:</b>				
Canada: Coal.....	10,587,611	12,163,804	9,139,042	8,626,197
Lignite.....	3,162,907	3,249,605	3,233,530	3,284,795
Greenland.....	2,100	2,117	2,500	(a)
Mexico.....	949,677	1,261,541	(a)	(a)
U.S.: Anthracite.....	49,607,344	84,675,282	79,765,491	56,082,505
Bituminous.....	383,073,174	512,161,770	438,790,754	474,425,000
Lignite.....				
<b>South America—</b>				
Argentina.....	(a)	(a)	(a)	(a)
Brazil.....	400,000	324,154	268,157	(a)
Chile.....	1,053,001	1,164,028	1,522,228	1,473,000
Colombia.....	(a)	(a)	(a)	(a)
Peru.....	294,492	298,000	(a)	(a)
Venezuela.....	20,782	18,050	(a)	(a)
<b>Europe—</b>				
Austria: Coal.....	165,727	158,133	172,043	(a)
Lignite.....	3,135,902	2,658,907	2,776,946	(a)
Belgium.....	21,208,500	22,922,340	23,359,790	23,133,160
Bulgaria.....	1,021,327	1,063,662	1,224,961	(a)
Czecho-Slovakia: Coal.....	10,464,990	12,347,251	15,178,942	12,550,323
Lignite.....	19,174,296	16,265,530	20,459,690	18,041,040
France: Coal.....	31,163,032	37,682,235	44,011,240	49,033,564
Lignite.....	777,813	861,435	944,080	(a)
Germany: Coal (b).....	141,204,597	71,345,820	133,160,764	132,729,097
Lignite.....	137,207,125	118,248,235	124,359,829	139,789,714
Greece.....	131,515	118,880	110,750	(a)
Hungary.....	7,117,610	7,704,765	7,202,026	6,325,779
Italy: Coal (c).....	195,352	168,922	22,100	(a)
Lignite.....	745,402	938,229	1,045,600	(a)
Jugo-Slavia.....	3,726,568	4,001,265	4,183,600	(a)
Netherlands: Coal (d).....	4,866,371	5,595,478	6,160,615	6,850,000
Lignite.....	28,919	54,185	(a)	(a)
Poland.....	24,194,797	36,296,032	32,224,680	28,862,400
Portugal.....	158,500	145,300	136,160	(a)
Roumania.....	2,116,221	2,366,068	2,775,985	(a)
Russia.....	8,914,600 (h)	14,504,300	16,189,000	19,000,000
Spain: Coal.....	4,435,843	5,971,446	6,102,391	5,852,000
Lignite.....	329,680	394,368	371,488	400,000
Spitzbergen (e).....	316,000	340,942	451,914	(a)
Sweden.....	378,861	419,569	437,856	(a)
Switzerland.....	3,380	(a)	(a)	(a)
United Kingdom.....	253,613,054	280,430,369	271,405,414	250,630,000
<b>Asia—</b>				
British India.....	19,316,112	19,973,285	20,582,156	20,100,000
China.....	22,681,000	19,955,000	20,969,000	20,000,000
Chosen.....	317,330	279,978	399,415	630,000
Federated Malay States.....	286,351	323,100	379,000	(a)
Indo-China.....	988,991	1,056,921	1,235,880	(a)
Japan (f).....	29,330,029	30,658,474	31,794,041	(a)
Russia.....	1,276,900	(g)	(g)	(g)
Turkey.....	680,000	(a)	(a)	(a)
<b>Africa—</b>				
Algeria.....	8,855	3,562	9,228	(a)
Nigeria.....	123,027	173,422	205,250	(a)
Rhodesia.....	467,787	559,999	591,526	689,200
Tunis.....	343	620	305	(a)
Union of South Africa.....	8,830,774	10,810,897	11,332,406	12,996,000
<b>Oceania—</b>				
Australia.....	12,496,417	12,837,099	14,107,844	11,200,000
British Borneo.....	88,948	90,000	(a)	(a)
Dutch East Indies.....	1,032,310	1,155,625	1,470,362	(a)
New Zealand.....	1,887,637	2,001,450	2,116,642	(a)
<b>Total.....</b>	<b>1,225,500,000</b>	<b>1,359,900,000</b>	<b>1,354,390,000</b>	<b>1,368,000,000</b>

<sup>1</sup> Source—*Mineral Industry* 1925.

(a) Estimate included in total. (b) Includes Saar Basin. (c) Includes new provinces. (d) Includes slack. (e) Shipments to Norway and Sweden. (f) Including Taiwan and Karafuto. (g) Russia in Asia included with Russia in Europe.

## COKE

Summary statistics relating to the production of coke and its by-products have been included in this report as a matter of interest.

Table 144.—Production<sup>1</sup> Exports, and Imports of Coke and its By-Products in Canada, 1923, 1924 and 1925

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>COKE—</b>						
<i>Coal charged to ovens—</i>						
(a) In coke plants:						
Domestic.....Tons	736,818	3,120,403	584,304	2,110,064	598,280	2,070,313
Foreign.....	970,206	6,071,461	826,613	4,415,142	930,738	4,723,140
(b) In gas plants:						
Bituminous....."	728,011	5,660,184	681,480	4,723,734	723,394	4,395,445
Anthracite....."	22,760	284,988	20,064	251,899	15,323	183,050
Total....."	2,457,795	15,137,036	2,112,461	11,500,839	2,267,735	11,371,948
<i>Output of coke, by provinces—</i>						
Nova Scotia and New Brunswick...."	392,041	3,446,732	259,376	1,621,123	307,253	1,667,781
Quebec....."	206,932	1,456,135	139,435	1,110,537	197,703	1,087,365
Ontario....."	856,541	7,095,792	812,939	6,038,724	820,839	5,967,333
Manitoba....."	28,278	357,189	28,450	336,762	30,660	326,882
British Columbia....."	153,313	1,456,701	130,399	1,181,657	180,284	1,433,479
Total....."	1,637,135	13,812,549	1,370,599	10,288,803	1,546,739	10,482,841
Imports of coke....."	733,604	5,790,771	521,725	3,131,485	852,427	5,553,494
Exports of coke....."	34,407	433,497	23,144	393,979	44,992	675,505
Apparent consumption of coke <sup>2</sup> ....."	2,336,332	19,169,823	1,869,180	13,026,309	2,354,174	15,360,740
<b>OTHER PRODUCTS—</b>						
<i>Production in Canada—</i>						
Ammonium sulphate.....Tons	21,518	1,268,146	17,343	865,530	18,251	909,097
Gas (a) From coke plants.....M. cu. ft.	14,798,857	1,842,006	8,437,314	1,879,296	12,124,442	2,030,129
(b) From gas plants....."	13,595,429		13,227,402		13,507,487	
Light oils.....Imp. gal.		130,662	1,810,301	216,805	2,100,705	263,503
Tar and tar products....."	17,739,609	611,674	19,007,522	736,034	18,804,192	1,050,655
All other products <sup>3</sup> ....."		581,065		346,762		105,178
<i>Imports—</i>						
Ammonium sulphate.....Tons	259	18,577	388	27,111	398	27,544
Coal tar and pitch.....Gals.	5,774,256	324,732	2,880,499	186,178	3,636,880	258,944
Coal tar base or salt.....Tons	45	27,810	81	33,397	111	50,617
<i>Exports—</i>						
Ammonium sulphate.....Tons	17,320	1,044,681	13,357	681,709	12,560	637,310
Tar and pitch.....Gals.	4,586,753	582,013	2,339,041	273,900	2,658,851	188,007

<sup>1</sup>Production data includes the outputs of the "Coke and its By-products Industry" and of the "Illuminating and Fuel Gas Industry."

<sup>2</sup>Includes the consumption in companies' own coke plants and in associated metallurgical works.

<sup>3</sup>Includes ammonia liquor and other products.

## FELDSPAR

Canadian feldspar production in 1925 amounted to 28,681 tons valued at \$235,789, as compared with 44,804 tons produced in 1924, valued at \$358,540. Of the total 1925 production, Quebec contributed 11,287 tons and Ontario 17,394 tons.

Production in 1925, however, was only slightly lower than the 1923 output of 29,225 tons. It may be noted that a somewhat similar trend was observed in the United States feldspar production figures. Data for 1924 showed an advance of about 41 per cent over the total for the preceding year, while the tonnage sold in 1925 marked a loss of 10 per cent from the figures for 1924.

Exports of Canadian feldspar amounted to 28,659 tons evaluated at \$209,164 as against 37,869 tons worth \$274,681 exported in the previous year. Importations into Canada totalled 1,570 tons as compared with 1,921 tons in 1924.

Feldspar, fine-ground, is used in the manufacture of enamelware, pottery and porcelain, washing compounds, abrasives, glass, roofing and paint, and in coarser form, as a constituent of artificial walls and floors. Most of the Canadian production is exported in the crude form to the United States for grinding.

Since the consumption of spar in Canada in the finely ground condition is not over 3,000 tons per annum, no difficulty is experienced in securing raw material of a quality suitable for any section of the industry. The bulk of the domestic demand is now supplied by Canadian mills. The average price received for crude spar in 1925 was \$8.22 per ton, while the ground material brought about \$16.65 per ton.

Grinding plants with a total capacity of 7,500 tons per annum are situated at Toronto and Kingston, Ontario. The Industrial Minerals Corporation of Toronto, and the Frontenac Floor and Wall Tile Company at Kingston operated grinding plants during the year.

Table 145.—Production of Feldspar in Canada, 1890-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	700	3,500	1902.....	7,576	15,152	1914.....	18,060	70,824
1891.....	685	3,425	1903.....	13,928	18,966	1915.....	14,559	57,801
1892.....	175	525	1904.....	11,083	22,166	1916.....	19,488	71,407
1893.....	575	4,525	1905.....	11,700	23,400	1917.....	19,462	89,826
1894.....			1906.....	16,948	40,890	1918.....	18,782	112,728
1895*.....		2,545	1907.....	12,534	29,819	1919.....	14,679	86,231
1896*.....	972	2,583	1908.....	7,877	21,099	1920.....	37,873	280,895
1897.....	1,400	3,290	1909.....	12,783	40,383	1921.....	29,868	230,754
1898.....	2,500	6,250	1910.....	15,809	47,667	1922.....	27,727	248,402
1899.....	3,000	6,000	1911.....	17,723	51,939	1923.....	29,225	237,601
1900.....	318	1,112	1912.....	13,733	30,916	1924.....	44,804	358,540
1901.....	5,350	10,700	1913.....	16,790	60,795	1925.....	28,681	235,789
<b>Total.....</b>							<b>477,417</b>	<b>2,528,445</b>

\*Exports.

Table 146.—Production in Canada, Imports and Exports of Feldspar, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	12,026	102,779	16,147	142,118	11,287	94,730
Ontario.....	17,199	134,822	28,657	216,422	17,394	141,059
<b>Total.....</b>	<b>29,225</b>	<b>237,601</b>	<b>44,804</b>	<b>358,540</b>	<b>28,681</b>	<b>235,789</b>
<b>IMPORTS.....</b>	<b>1,701</b>	<b>36,622</b>	<b>1,921</b>	<b>37,845</b>	<b>1,570</b>	<b>31,114</b>
<b>EXPORTS.....</b>	<b>26,476</b>	<b>177,569</b>	<b>37,869</b>	<b>274,681</b>	<b>28,659</b>	<b>209,164</b>

Table 147.—World's Production of Feldspar 1913, and 1921-1925

(Long tons)

Country	1913	1921	1922	1923	1924	1925
United Kingdom†.....	66,626	35,976	39,751	54,589	55,756	57,379
Canada¹.....	14,991	26,668	24,756	26,094	40,003	25,608
Australia.....		26	85	33	15	32
Finland.....		942	1,301	778	659	788
Germany (Bavaria).....	(a)	7,132	5,982	8,851	32,605	10,093
Italy.....		2,360	2,745	4,989	3,200	2,500
Japan.....	(a)	(a)	15,802	22,571	23,050	(a)
Norway (exports).....	40,186	9,200	11,643	12,863	20,530	26,355
Russia.....	(a)	662	(a)	(a)	(a)	(a)
Sweden.....	37,269	19,661	22,010	16,008	18,999	26,244
United States.....	107,996	91,865	117,127	145,004	204,772	184,100
<b>Total.....</b>	<b>267,068</b>	<b>194,492</b>	<b>241,202</b>	<b>291,780</b>	<b>399,589</b>	<b>333,099</b>

†Including China Stone.

¹Source—

¹Dominion Bureau of Statistics, Canada.

Prior to 1925, Imperial Mineral Resources Department publications. 1925 figures obtained directly from statistical bureaus of the different countries.

(a) Data not available.

## FLUORSPAR

In 1925, flourspar production in Canada amounted to 3,886 tons with a valuation of \$19,234 as compared with 76 tons at \$1,343 produced in the previous year. Importations of flourspar into Canada increased considerably and amounted to 5,111 tons worth \$60,458 as against 4,355 tons appraised at \$50,158 in 1924.

A small amount of the 1925 production was credited to the province of Ontario; the remainder was shipped from the Rock Candy mine owned and operated by the Consolidated Mining & Smelting Co. Limited for use in their own smelter at Trail, British Columbia.

Table 148.—Production in Canada and Imports of Fluorspar, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Ontario.....	64	597	76	1,343	12	200
British Columbia.....	75	1,135			3,874	19,034
<b>Total.....</b>	<b>139</b>	<b>1,732</b>	<b>76</b>	<b>1,343</b>	<b>3,886</b>	<b>19,234</b>
IMPORTS—						
Hydro fluo silicic acid.....	3.8	662	.01	40	2.18	636
Fluorspar.....	17,235	199,595	4,355	50,158	5,111	60,458

## ERRATUM

The first paragraph under the heading "Graphite" should read as follows:—

The year under review marked a considerable advance in the production of graphite in Canada. The 1925 shipments totalling in all 2,569 tons, have been exceeded only by the production during the war years. In 1924 the sales amounted to 1,334 tons at \$76,117. The Black Donald Graphite Company; the Canadian Graphite Corporation; North American Graphite Company; Quebec Graphite Corporation; and the Timmins Graphite Company all reported shipments during 1925. The Graphite Refining Company re-opened the old Globe mine, near Port Elmsley, Ontario.

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Table 149.—Production of Graphite in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	500	4,000	1899.....	1,130	24,179	1913.....	2,162	90,282
1887.....	300	2,400	1900.....	1,922	31,040	1914.....	1,647	107,203
1888.....	150	1,200	1901.....	2,210	38,780	1915.....	2,635	124,223
1889.....	242	3,160	1902.....	1,095	28,300	1916.....	3,955	325,362
1890.....	175	5,200	1903.....	728	23,745	1917.....	3,714	402,892
1891.....	260	1,560	1904.....	452	11,760	1918.....	3,114	248,870
1892.....	260	1,560	1905.....	541	16,735	1919.....	1,360	100,221
1893.....	167	3,763	1906.....	387	18,300	1920.....	2,190	165,617
1894.....	3	223	1907.....	579	16,000	1921.....	937	65,862
1895.....	220	6,150	1908.....	251	5,565	1922.....	597	31,353
1896.....	139	9,455	1909.....	864	47,800	1923.....	1,113	67,873
1897.....	436	16,240	1910.....	1,332	74,087	1924.....	1,334	76,117
1898.....		13,698	1911.....	1,269	69,576	1925.....	2,569	158,763
			1912.....	2,060	117,122	<b>Total.....</b>	<b>44,799</b>	<b>2,554,676</b>

\*Exports.

Since the consumption of spar in Canada in the finely ground condition is not over 3,000 tons per annum, no difficulty is experienced in securing raw material of a quality suitable for any section of the industry. The bulk of the domestic demand is now supplied by Canadian mills. The average price received for crude spar in 1925 was \$8.22 per ton, while the ground material brought about \$16.65 per ton.

Grinding plants with a total capacity of 7,500 tons per annum are situated at Toronto and Kingston, Ontario. The Industrial Minerals Corporation of Toronto, and the Frontenac Floor and Wall Tile Company at Kingston operated grinding plants during the year.

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1891.....	685	3,425	1903.....	13,928	18,966	1915.....	14,559	57,801
1892.....	175	525	1904.....	11,083	22,166	1916.....	19,488	71,407
1893.....	575	4,525	1905.....	11,700	23,400	1917.....	19,462	89,826
1894.....			1906.....	16,948	40,890	1918.....	18,782	112,728
1895*.....		2,545	1907.....	12,534	29,819	1919.....	14,679	86,231
1896*.....	972	2,583	1908.....	7,877	21,099	1920.....	37,873	280,895
1897.....	1,400	3,290	1909.....	12,783	40,383	1921.....	29,868	230,754
1898.....	2,500	6,250	1910.....	15,809	47,667	1922.....	27,727	248,402
1899.....	3,000	6,000	1911.....	17,723	51,939	1923.....	29,225	237,601
1900.....	318	1,112	1912.....	13,733	30,916	1924.....	44,804	358,540
1901.....	5 350	10 700	1913.....	16 700	60 705	1925.....	90 601	692 700

\*Exports.

Table 146.—

PRODUCTION—
Quebec.....
Ontario.....
<b>Total</b>
IMPORTS.....
EXPORTS.....

Table 147.—World's Production of Feldspar 1913, and 1921-1925

(Long tons)

Country	1913	1921	1922	1923	1924	1925
United Kingdom.....	66,626	35,976	39,751	54,589	55,756	57,379
Canada <sup>1</sup> .....	14,991	26,668	24,756	26,094	40,003	25,608
Australia.....		26	85	33	15	32
Finland.....		942	1,301	778	659	788
Germany (Bavaria).....	(a)	7,132	5,982	8,851	32,605	10,093
Italy.....		2,360	2,745	4,989	3,200	2,500
Japan.....	(a)	(a)	15,802	22,571	23,050	(a)
Norway (exports).....	40,186	9,200	11,643	12,863	20,530	26,355
Russia.....	(a)	662	(a)	(a)	(a)	(a)
Sweden.....	37,269	19,661	22,010	16,008	18,999	26,244
United States.....	107,996	91,865	117,127	145,004	204,772	184,100
<b>Total.....</b>	<b>267,068</b>	<b>194,492</b>	<b>241,202</b>	<b>291,780</b>	<b>399,589</b>	<b>333,099</b>

<sup>1</sup>Including China Stone.

\*Source—

<sup>1</sup>Dominion Bureau of Statistics, Canada.

Prior to 1925, Imperial Mineral Resources Department publications. 1925 figures obtained directly from statistical bureaus of the different countries.

(a) Data not available.

## FLUORSPAR

In 1925, flourspar production in Canada amounted to 3,886 tons with a valuation of \$19,234 as compared with 76 tons at \$1,343 produced in the previous year. Importations of flourspar into Canada increased considerably and amounted to 5,111 tons worth \$60,458 as against 4,355 tons appraised at \$50,158 in 1924.

A small amount of the 1925 production was credited to the province of Ontario; the remainder was shipped from the Rock Candy mine owned and operated by the Consolidated Mining & Smelting Co. Limited for use in their own smelter at Trail, British Columbia.

Table 148.—Production in Canada and Imports of Fluorspar, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Ontario.....	64	597	76	1,343	12	200
British Columbia.....	75	1,135			3,874	19,034
<b>Total.....</b>	<b>139</b>	<b>1,732</b>	<b>76</b>	<b>1,343</b>	<b>3,886</b>	<b>19,234</b>
IMPORTS—						
Hydro fluo silicic acid.....	3.8	662	.01	40	2.18	636
Fluorspar.....	17,235	199,595	4,355	50,158	5,111	60,458

## GRAPHITE

In 1925, fluorspar production in Canada amounted to 3,886 tons with a valuation of \$19,234 as compared with 76 tons at \$1,343 produced in the previous year. Importations of production during the war years. In 1924 the sales amounted to 1,334 tons at \$76,117. The Black Donald Graphite Company; the Canadian Graphite Corporation; North American Graphite Company; Quebec Graphite Corporation; and the Timmins Graphite Company all reported shipments during 1925. The Graphite Refining Company re-opened the old Globe mine, near Port Elmsley, Ontario.

Prices in the United States market are summed up in the *Engineering and Mining Journal* as follows:—

“With practically no graphite to be sold at sacrifice prices, as in former years, the prices for all grades of graphit<sup>6</sup> increased during 1925. New York prices for Ceylon material averaged about as follows: No. 1 lump, 93 to 9½c.; No. lump, 8 to 8½c.; No. 1 chip, 7½ to 8c.; No. 2 chip, 7 to 7½c.; No. 1 dust, 5 to 6c.; No. 2 dust, 4 to 5c. per pound.  
“Flake graphite from Madagascar, after paying a duty of 1½c. per lb., sold in New York at 6 to 8c. per lb. The Canadian and domestic flake graphites seem to have commanded approximately the same prices.”

Table 149.—Production of Graphite in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	500	4,000	1899.....	1,130	24,179	1913.....	2,162	90,282
1887.....	300	2,400	1900.....	1,922	31,040	1914.....	1,647	107,203
1888.....	150	1,200	1901.....	2,210	38,780	1915.....	2,635	124,223
1889.....	242	3,160	1902.....	1,095	28,300	1916.....	3,955	325,362
1890.....	175	5,200	1903.....	728	23,745	1917.....	3,714	402,892
1891.....	260	1,560	1904.....	452	11,760	1918.....	3,114	248,870
1892.....	167	3,763	1905.....	541	16,735	1919.....	1,360	100,221
1893.....			1906.....	387	18,300	1920.....	2,190	165,617
1894*.....	3	223	1907.....	579	16,000	1921.....	937	65,862
1895.....	220	6,150	1908.....	251	5,565	1922.....	597	31,353
1896.....	139	9,455	1909.....	864	47,800	1923.....	1,113	67,873
1897.....	436	16,240	1910.....	1,392	74,087	1924.....	1,334	76,117
1898.....		13,698	1911.....	1,269	69,576	1925.....	2,569	158,763
			1912.....	2,060	117,122			
						<b>Total.....</b>	<b>44,799</b>	<b>2,554,676</b>

\*Exports.

Table 150.—Production in Canada, Imports and Exports of Graphite, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Ore milled.....	1,400		3,590		6,534	
PRODUCTION—						
No. 1 Flake.....	1,113	67,873	1,334	76,117	2,569	158,763
No. 2 Flake.....						
No. 3 Flake and dust.....						
<b>Total</b> .....	<b>1,113</b>	<b>67,873</b>	<b>1,334</b>	<b>76,117</b>	<b>2,569</b>	<b>158,763</b>
IMPORTS—						
Crucibles, plumbago.....		57,322		42,740		49,730
Plumbago, not ground or otherwise manufactured.....		1,661		2,651		772
Plumbago, ground and manufactures of, n.o.p.....		70,704		50,924		91,767
EXPORTS—						
Graphite or plumbago, crude or refined....	799	36,980	1,148	59,992	2,483	135,897

**Artificial Graphite.**—Artificial graphite is manufactured in electric furnaces at Niagara Falls, Ontario, by the Acheson Graphite Company. The annual production over a period of sixteen years is shown in the following table:

Table 151.—Artificial Graphite made in Canada, 1910-1925

Year	Pounds	Year	Pounds	Year	Pounds
1910.....	2,442,166	1915.....	497,271	1921.....	376,508
1911.....	2,172,098	1916.....	525,048	1922.....	724,524
1912.....	2,302,625	1917.....	1,096,172	1923.....	1,554,376
1913.....	2,184,472	1918.....	1,808,698	1924.....	816,455
1914.....	1,234,239	1919.....	358,524	1925.....	688,230
		1920.....	207,180		

### GYPSUM

Increased production of gypsum in Nova Scotia was mainly responsible for the establishment of a new high record for this industry in 1925. The total production for Canada in 1925 was 740,323 tons with a valuation of \$2,389,891 as compared with 646,016 tons at \$2,208,108 in 1924. Production included lump, crushed, fine ground, and calcined gypsum, the last-named item comprising sales and also the calcined gypsum used in the calcining plants for the production of wall plaster, wallboard, alabastine, and other gypsum products. The average values received by the operators were as follows: lump, \$1.51; crushed, \$1.83; fine ground, \$5.98; and calcined, \$8.62 per ton. The total gypsum mined during 1925 was 705,852 tons, of which quantity 162,820 tons or 23 per cent was calcined.

For statistical purposes, as noted above, the production of gypsum is considered to be the sum of the quantities disposed of in the different marketable forms, care being taken to avoid duplication; the values used are those at point of shipment.

Imports of gypsum into Canada were recorded at 8,921 tons with a valuation of \$136,308 as compared with a total of 7,323 tons at \$128,100 imported in 1924.

Exports of Canadian crude gypsum, principally to the United States, totalled 533,646 tons. Ground gypsum and prepared wall plaster exported during the year amounted to 5,643 tons; United States, Newfoundland, Australia and New Zealand were the principal buyers of these materials.

Table 152.—\*World's Production of Gypsum 1913, and 1921-1925

(Long tons)

COUNTRY	1913	1921	1922	1923	1924	1925
<b>BRITISH EMPIRE</b>						
United Kingdom.....	285,338	264,864	257,540	317,909	371,703	414,529
Canada.....	568,188	345,134	499,344	516,340	576,800	661,003
Union of South Africa.....	108	(a)	(a)	5,731	9,073	(a)
Cyprus (b).....	3,714	8,881	11,873	11,029	14,296	24,123
India.....	24,961	33,801	40,701	39,297	38,123	(a)
Australia.....	8,826	45,822	53,941	68,236	85,861	90,150
<b>Total.....</b>	<b>891,135</b>	<b>695,502</b>	<b>863,399</b>	<b>958,542</b>	<b>1,095,856</b>	<b>1,189,805</b>
<b>FOREIGN COUNTRIES</b>						
Austria.....		16,953	28,300	35,561	32,262	24,067
France.....	1,698,633	1,738,458	1,738,859	2,319,414	(a)	(a)
Germany.....		2,928	46,557	29,579	42,635	57,352
Greece.....	2,194	1,243	2,458	2,434	(a)	(a)
Italy.....		448,071	458,904	547,364	590,298	662,707
Rumania.....			8,916	37,810	20,454	(a)
Spain (b).....	6,938	4,601	4,218	2,444	4,568	2,958
Algeria.....			42,900	48,633	(a)	(a)
United States.....	2,320,989	2,581,057	3,374,954	4,244,150	4,502,347	5,066,964
Argentina (b).....	171	1,771	1,289	2,106	2,179	1,833
Chile.....	6,038	11,616	6,982	8,147	5,600	(a)
China (b).....	4,970	6,059	7,631	7,159	5,042	6,984
Japan.....	(a)	(a)	53,202	33,724	42,400	(a)
New Caledonia.....			12,000	(a)	(a)	(a)
<b>Total.....</b>	<b>4,039,933</b>	<b>4,812,757</b>	<b>5,787,170</b>	<b>7,318,525</b>	<b>5,247,785</b>	<b>5,822,865</b>
<b>Grand Total.....</b>	<b>4,931,068</b>	<b>5,511,259</b>	<b>6,650,569</b>	<b>8,277,067</b>	<b>6,343,641</b>	<b>7,012,670</b>

\* Source—Imperial Mineral Resources Department publications. 1925 figures obtained directly from the statistical bureaus of the different countries.

(a) Data not available.

(b) Exports.

Table 153.—Production of Gypsum in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	162,000	178,742	1900.....	252,101	259,009	1914.....	516,880	1,156,207
1887.....	154,008	157,277	1901.....	293,799	340,148	1915.....	474,815	854,929
1888.....	175,887	179,393	1902.....	333,599	379,479	1916.....	342,915	738,593
1889.....	213,273	205,108	1903.....	314,489	388,459	1917.....	336,332	881,984
1890.....	226,509	194,033	1904.....	345,961	373,474	1918.....	152,287	823,006
1891.....	203,605	206,251	1905.....	442,158	586,168	1919.....	299,063	1,215,287
1892.....	241,045	241,127	1906.....	469,022	643,294	1920.....	429,144	1,893,991
1893.....	192,568	196,150	1907.....	485,921	646,914	1921.....	386,550	1,785,538
1894.....	223,631	202,031	1908.....	340,964	575,701	1922.....	559,265	2,160,898
1895.....	226,178	202,608	1909.....	473,129	809,632	1923.....	578,301	2,243,100
1896.....	207,032	178,061	1910.....	525,246	934,446	1924.....	646,016	2,208,108
1897.....	239,691	244,531	1911.....	518,383	993,394	1925.....	740,323	2,389,891
1898.....	219,256	232,515	1912.....	578,458	1,324,620			
1899.....	244,566	257,329	1913.....	636,370	1,447,739	<b>Total.....</b>	<b>14,400,743</b>	<b>30,929,165</b>

Table 154.—Summary of Statistics on Gypsum in Canada, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude gypsum mined.....	558,853		703,733		705,852	
Crude gypsum calcined.....	152,036		144,744		162,820	
<b>PRODUCTION BY GRADES—</b>						
Lump.....	217,414	394,217	139,618	253,191	131,612	198,806
Crushed.....	232,899	443,431	381,262	693,785	447,766	820,141
Fine ground.....	7,452	45,719	5,478	31,882	5,993	35,843
Calcined.....	120,536	1,359,733	119,658	1,229,250	154,952	1,335,101
<b>Total.....</b>	<b>578,301</b>	<b>2,243,100</b>	<b>646,016</b>	<b>2,208,108</b>	<b>740,323</b>	<b>2,389,891</b>
<b>PRODUCTION BY PROVINCES—</b>						
Nova Scotia.....	341,705	747,934	441,752	915,845	551,230	1,070,408
New Brunswick.....	104,740	564,680	86,738	476,804	71,745	408,917
Ontario.....	99,958	542,317	88,121	467,097	82,020	491,833
Manitoba.....	31,575	386,554	29,375	348,212	35,088	417,868
British Columbia.....	323	1,615	30	150	240	865
<b>Total.....</b>	<b>578,301</b>	<b>2,243,100</b>	<b>646,016</b>	<b>2,208,108</b>	<b>740,323</b>	<b>2,389,891</b>
<b>IMPORTS—</b>						
Crude.....	3,654	39,336	3,252	63,156	4,433	66,064
Ground.....	78	3,253	102	2,174	119	3,858
Plaster of Paris.....	3,617	54,591	3,969	62,770	4,369	66,386
<b>Total.....</b>	<b>7,349</b>	<b>97,180</b>	<b>7,323</b>	<b>128,100</b>	<b>8,921</b>	<b>136,308</b>
<b>EXPORTS—</b>						
Crude.....	397,329	578,859	472,236	747,829	533,646	861,468
Ground.....	4,654	92,478	5,226	83,927	5,643	87,242
<b>Total.....</b>	<b>401,983</b>	<b>671,337</b>	<b>477,462</b>	<b>831,756</b>	<b>539,289</b>	<b>948,710</b>

## IRON OXIDES

Iron oxides in Canada have two main uses: (a) for the purification of illuminating gas and (b) as a raw material in the paint industry. When the material is to be used in the purification of coal gas, the iron oxides are shipped as mined but when it is to be used in the manufacture of paints, it is customary to dry and calcine the oxides before they are shipped.

Shipments of iron oxides in 1925 amounted to 7,118 tons valued at \$91,913, as compared with 7,266 tons valued at \$91,160 in 1924.

Although the province of Quebec claimed the greater part of this production, small shipments were also made from the province of British Columbia.

Table 155.—Production of Iron Oxides in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	350	2,350	1900.....	1,966	15,398	1914.....	5,890	51,725
1887.....	485	3,733	1901.....	2,233	16,735	1915.....	6,248	48,353
1888.....	397	7,900	1902.....	4,955	30,495	1916.....	8,811	58,711
1889.....	794	15,280	1903.....	6,266	32,760	1917.....	9,409	87,605
1890.....	275	5,125	1904.....	3,925	24,995	1918.....	17,317	112,440
1891.....	900	17,750	1905.....	5,105	34,675	1919.....	11,862	113,427
1892.....	390	5,800	1906.....	6,758	36,125	1920.....	19,128	157,909
1893.....	1,070	17,700	1907.....	5,828	35,570	1921.....	9,048	93,610
1894.....	611	8,690	1908.....	4,746	30,440	1922.....	7,285	110,608
1895.....	1,339	14,600	1909.....	3,940	28,093	1923.....	10,424	129,636
1896.....	2,362	16,045	1910.....	4,813	35,185	1924.....	7,266	91,160
1897.....	3,905	23,560	1911.....	3,622	28,333	1925.....	7,118	91,913
1898.....	2,226	17,450	1912.....	7,654	32,410			
1899.....	3,919	20,000	1913.....	5,987	41,774	<b>Total.....</b>	<b>206,627</b>	<b>1,746,068</b>

Table 156.—Production in Canada, Imports and Exports of Iron Oxides, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	10,424	129,636	7,266	91,160	7,118	91,913
IMPORTS—						
Ochrey earths.....	2,251	79,203	2,103	72,414	2,401	82,096
Oxides.....	3,530	476,382	2,435	387,544	2,532	460,063
Exports (mineral pigments, iron oxides and ochres).....	1,041	51,617	882	44,681	850	40,435

## LITHIUM MINERALS

In a statement prepared by J. F. Wright, Federal Department of Mines, Ottawa, Canada, on the subject of lithium minerals, there are the following remarks:—

“An outcrop of massive lepidolite was discovered in July, 1924, about one mile south of the Winnipeg river, some 10 miles east and a little north of Pointe du Bois. The Manitoba lithium deposits are the only ones of possible commercial value known within the British Empire.

At the Silver Leaf Mining Syndicate deposit, the lithium minerals occur in pockets and lenses in the central portion of a body of pegmatite which is exposed for 125 feet in a general east-west direction and across an average width of 80 feet. An analysis of a hand-picked sample, judged to represent approximately the lithium-bearing rock after the gangue has been removed, gave 4.76 per cent lithia ( $\text{Li}_2\text{O}$ ). There is estimated to be between 2,500 and 3,000 tons of this type of ore for each 10 feet in depth within a horizontal area equal to that at the surface. Two lens-shaped bodies of lepidolite, or a lithia mica of like character, estimated to contain about 540 tons of lithia ore for each 10 feet in depth and averaging 3.87 per cent lithia, occur near the south side of the pegmatite mass. This lithia mica contains only one-tenth of one per cent iron ( $\text{Fe}_2\text{O}_3$ ), and therefore probably will be found satisfactory for the manufacture of opal, white and flint glass.”

Experimental shipments of material containing lepidolite and spodumene were made to England during 1925. Considerable development work, draining, ditching, stripping, etc., was carried on during the year.

## MAGNESITE

The total production of magnesite in Canada for 1925 amounted to 5,576 tons valued at \$122,325 as against 3,873 tons valued at \$101,356 in 1924.

All the magnesite mined during 1925 was produced in the province of Quebec and was sold in three forms, namely, crude, dead-burned and calcined. Dead-burned magnesite is used entirely in the metallurgical industry as a refractory lining for furnaces. Calcined magnesite is used as a plastic material for floors and walls in buildings and also in the manufacture of pipe and furnace coverings, as it has strong insulating properties.

The *New Tariff Act of 1922 on Imports into United States*, which came into effect in September, 1922, provided the following duties on the various forms of magnesite; Crude magnesite,  $\frac{5}{16}$  of 1 cent per pound; caustic calcined magnesite,  $\frac{3}{8}$  of 1 cent per pound; dead burned and grain magnesite, not suitable for manufacture into oxychloride cements,  $\frac{23}{40}$  of 1 cent per pound.

Exports of calcined magnesite from Canada amounted to 834 tons in 1925 as against 293 tons in 1924.

Table 157.—Production of Magnesite in Canada, 1908-1925

Year	Tons	Value	Year	Tons	Value
		\$			\$
1908.....	120	840	1918.....	39,365	1,016,765
1909.....	330	2,508	1919.....	11,273	328,465
1910.....	323	2,160	1920.....	18,378	512,756
1911.....	991	5,531	1921.....	3,730	81,320
1912.....	1,714	9,645	1922.....	2,849	76,294
1913.....	515	3,335	1923.....	4,801	134,382
1914.....	358	2,240	1924.....	3,873	101,356
1915.....	14,779	126,584	1925.....	5,576	122,325
1916.....	55,413	563,829			
1917.....	58,090	728,275	<b>Total.....</b>	<b>222,478</b>	<b>3,818,610</b>

Table 158.—Production in Canada, Imports and Exports of Magnesite, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude, mined.....	13,315		10,485		4,219	
Crude, calcined.....	12,125		5,162		6,210	
<b>PRODUCTION—</b>						
Crude.....					1,507	6,406
Calcined.....	120	3,705	1,535	30,216	4,069	115,919
Dead-burned.....	4,681	130,677	2,338	71,140		
<b>Total.....</b>	<b>4,801</b>	<b>134,382</b>	<b>3,873</b>	<b>101,356</b>	<b>5,576</b>	<b>122,325</b>
<b>IMPORTS—</b>						
Magnesia pipe covering.....		141,926		121,046		108,681
Magnesite.....	244	9,223	280	8,980	111	4,528
Magnesite firebrick.....		120,453		91,553		75,161
<b>EXPORTS—</b>						
Crude.....	563	14,056	293	8,520	834	21,401
Calcined.....						

Table 159.—\*World's Production of Magnesite, 1913, and 1921-1925

(Unless otherwise stated the quantities in the table represent crude magnesite mined.)

(Metric tons)

COUNTRY	1913	1921	1922	1923	1924	1925
Australia—						
New South Wales.....	7,112	12,465	3,424	6,229	12,691	12,000
South Australia.....		175	555	168	131	357
Victoria.....	106	130	99	76	77	
Western Australia.....				(a) 2	151	
Austria-Hungary.....	(a) 422,349	(c) 160,823	427,556	180,291	(c) 155,644	160,000
Canada.....		4,521	7,899	12,934	(f) 3,514	1,056
Cyprus.....			895	285	224	
Greece.....	98,157	58,249	56,642	57,783	58,200	58,000
India, British.....	16,458	20,338	10,582	19,749	24,868	20,000
Italy.....	600	9,410	8,700	12,474	13,433	11,000
Norway.....	(b) 656	(b) 210	(b) 1,260	(b) 3,879	2,441	
Russia.....		(d) 16,382	10,567	(e) 15,425	30,600	30,000
Spain.....	958		303			
Union of South Africa.....	403	1,317	962	1,240	2,002	1,860
United States (sold or treated).....	8,738	43,458	50,612	133,582	94,721	109,460
Venezuela (exports).....	No data available	2,450	No data available	No data available	No data available	
<b>Total.....</b>	<b>555,537</b>	<b>329,928</b>	<b>580,086</b>	<b>444,117</b>	<b>398,597</b>	<b>407,733</b>

\*From *Mineral Resources of the United States*, 1925.

(a) Exports, and computed on a basis of 2.1 tons crude to 1 ton sintered.

(b) Exports. Computed on the basis of 2.1 tons crude to 1 ton sintered. In addition in 1913 there were 626 tons of magnesite brick exported; in 1921 there were 337 tons exported.

(c) Exports from the Republic of Austria, computed on the basis of 2.1 tons crude to 1 ton sintered. In addition 8,252 tons of caustic magnesite were exported in 1921. In 1922 the companies operating, reported 427,556 tons raw magnesite produced.

(d) Computed on the basis of 2.1 tons crude to 1 ton sintered.

(e) Operation year Oct. 1, 1922 to Sept. 30, 1923.

(f) From Table 157 of this report.

## MAGNESIUM SULPHATE

No production of magnesium sulphate in Canada was reported during 1925. In 1924, there were no shipments of this commodity but 121 tons valued at \$6,580 were shipped in 1923.

Importations during the year of magnesium sulphate or epsom salts amounted to 2,137 tons valued at \$45,181; no exports were recorded.

Natural magnesium sulphate occurs in a deposit near Ashcroft, British Columbia, owned by the Basque Chemical Company. During 1923 shipments were made from this deposit as far east in Canada, as Toronto, Ontario.

**Table 160.—Production in Canada, Imports and Exports of Magnesium Sulphate, 1923, 1924 and 1925**

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Crude.....	121	6,580				
Refined.....						
IMPORTS.....	1,867	47,155	2,238	54,139	2,137	45,181
EXPORTS.....	20	880				

## MICA

The total production of mica in 1925 amounted to 4,020 tons valued at \$261,463, or an average price of 0.03 cents per pound as against 4,091 tons valued at \$357,272 in 1924.

Shipments of rough-cobbed grades were over 20 per cent lower in 1925 than in the previous year. Thumb-trimmed production was also less by approximately 300,000 pounds while splittings were higher by about 24,000 pounds.

Scrap material, which includes mica that is too small and irregular for splitting, and the refuse from the trimming shops, is ground and bolted into various sizes, grading from 20-mesh to 200-mesh. Grades ranging from 20 to 80-mesh are used in the manufacture of prepared roofings; the 40-mesh grade, if free from grit, is used as a lubricant in some axle greases; and the 200-mesh grade is used as a filler in rubber manufacture.

Deposits of phlogopite mica in the Lièvre-Gatineau district, Quebec, and in Frontenac county, Ontario, continued to be the source of practically the entire Canadian production. It will be noted that the stated value of the exports of Canadian mica exceeded by a considerable amount the value placed on shipments reported by operators. An explanation of this, lies in the fact, that the exported material consisted principally of mica splittings shipped from large trimming shops situated in Ontario and Quebec.

Under the United States *New Tariff Act* the duties on the different grades of mica are as follows: Mica, unmanufactured, valued at not above 15 cents per pound—4 cents per pound; Mica, unmanufactured, valued at above 15 cents per pound—25 per centum ad valorem; mica, cut or trimmed and mica splittings—30 per centum ad valorem; mica plates, and built-up mica, and all manufactures of mica, of which mica is the component material of chief value—40 per centum ad valorem; ground mica—20 per centum ad valorem.

**Table 161.—Production of Mica in Canada, 1886-1925**

Year	Value	Year	Tons	Value	Year	Tons	Value
	\$			\$			\$
1886.....	29,008	1900.....		166,000	1914.....	595	109,061
1887.....	29,816	1901.....		160,000	1915.....	417	91,905
1888.....	30,207	1902.....		135,904	1916.....	1,208	255,239
1889.....	28,718	1903.....		177,857	1917.....	1,166	353,851
1890.....	68,074	1904.....		160,777	1918.....	747	271,550
1891.....	71,510	1905.....		178,235	1919.....	2,754	273,788
1892.....	104,745	1906.....		303,913	1920.....	2,203	376,022
1893.....	75,719	1907.....		312,599	1921.....	702	70,063
1894.....	45,581	1908.....		139,871	1922.....	3,349	152,263
1895.....	65,000	1909.....	369	147,782	1923.....	3,525	326,974
1896.....	60,000	1910.....	758	190,385	1924.....	4,091	357,272
1897.....	76,000	1911.....	590	128,677	1925.....	4,020	261,463
1898.....	118,375	1912.....	530	143,976			
1899.....	163,000	1913.....	1,104	194,304	<b>Total.....</b>		<b>6,410,484</b>

Table 162.—Production of Mica in Canada by Grades, 1924 and 1925

(Long tons)

	1924			1925		
	Pounds	Value f. o. b. shipping point	Price per pound	Pounds	Value f. o. b. shipping point	Price per pound
		\$	\$		\$	\$
Rough cobbled.....	535,295	33,337	0-06	413,500	23,471	0-05
Thumb-trimmed.....	662,709	142,405	0-21	357,943	73,443	0-20
Splittings only.....	164,734	137,248	0-83	138,265	129,454	0-69
Scrap.....	6,819,636	44,282	0-006	7,080,331	35,095	0-05
<b>Total.....</b>	<b>8,182,374</b>	<b>357,272</b>	<b>0-04</b>	<b>8,040,039</b>	<b>261,463</b>	<b>0-03</b>

Table 163.—Production in Canada and Exports of Mica, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
<b>PRODUCTION—</b>		\$		\$		\$
Quebec.....	1,545	216,684	1,677	185,020	2,415	178,800
Ontario.....	1,980	110,290	2,414	172,252	1,605	82,663
<b>Total.....</b>	<b>3,525</b>	<b>326,974</b>	<b>4,091</b>	<b>357,272</b>	<b>4,020</b>	<b>261,463</b>
<b>EXPORTS—</b>						
Cobbled.....	85	40,286	88	52,527	28	21,366
Splittings.....	502	624,110	485	424,503	230	324,967
Scrap and waste.....	4,855	70,866	2,519	63,610	4,991	63,931
Plate and manufactures.....		22,014		3,326		1,046
<b>Total.....</b>		<b>757,276</b>		<b>543,966</b>		<b>411,310</b>

Table 164.—\*World's Production of Mica, 1913 and 1921-1925

(Long tons)

Country	1913	1921	1922	1923	1924	1925
<b>British Empire</b>						
Canada.....	986	627	2,990	3,147	3,653	3,589
India.....	2,288	1,624	2,992	3,948	4,112	4,985
Southern Rhodesia.....		76	59	81	134	130
Tanganyika Territory.....		3	11	32	55	68
Union of South Africa.....		2	1	13	892	1,439
Ceylon.....		5	1	1		(a)
Australia.....			4		2	4
<b>Total.....</b>	<b>3,274</b>	<b>2,337</b>	<b>6,058</b>	<b>7,222</b>	<b>8,848</b>	<b>10,215</b>
<b>Foreign Countries</b>						
United States.....	5,511	2,632	6,411	8,112	4,856	4,670
Madagascar.....		152	91	162	274	282
Argentina (exports).....	6	145	63	100	118	117
Brazil.....	10	45	66	55	78	(a)
Japan.....			15	424	582	(a)
Guatemala.....		(b)	(c)	4		
Korea.....				11	23	(a)
Norway.....		2	1			(a)
Russia.....			8	(a)	(a)	(a)
Spain.....		2		3	(a)	(a)
Sweden.....			8	5	4	(a)
<b>Total.....</b>	<b>5,527</b>	<b>2,978</b>	<b>6,667</b>	<b>8,872</b>	<b>5,935</b>	<b>5,069</b>
<b>Grand Total.....</b>	<b>8,801</b>	<b>5,315</b>	<b>12,725</b>	<b>16,094</b>	<b>14,783</b>	<b>15,284</b>

\*Source—Prior to 1925 Imperial Mineral Resources Department publications, 1925 figures obtained directly from statistical bureaux of the different countries.

(a) Data not available.

(b) Less than  $\frac{1}{2}$  ton.

(c) Estimated.

## MINERAL WATERS

Mineral waters produced in Canada during 1925 amounted to 190,134 imperial gallons valued at \$28,413 as compared with 209,353 gallons valued at \$15,421 in the previous year. Mineral springs in Ontario and Quebec contributed the whole of the Canadian production. In the present compilation there has been included a record of all natural mineral waters sold to the general public for medicinal purposes. No record has been kept of the shipments made of ordinary spring waters. The values given do not take into account any mineral waters used at the springs for drinking or bathing purposes but include only the shipments from the springs in bottles or other containers.

Table 165.—Production of Mineral Waters in Canada, 1888-1925

Year	Imp. gals.	Value	Year	Value	Year	Imp. gals.	Value
		\$		\$			\$
1888.....	124,850	11,456	1901.....	100,000	1914.....		134,111
1889.....	424,600	37,360	1902.....	100,000	1915.....		115,274
1890.....	561,165	66,031	1903.....	100,000	1916.....		127,806
1891.....	427,485	54,268	1904.....	100,000	1917.....		145,814
1892.....	640,380	75,348	1905.....	100,000	1918.....		154,468
1893.....	725,096	108,347	1906.....	100,000	1919.....		71,015
1894.....	767,460	110,040	1907.....	136,020	1920.....		24,582
1895.....	739,382	126,048	1908.....	151,953	1921.....	328,273	21,716
1896.....	706,372	111,736	1909.....	175,173	1922.....	221,433	14,220
1897.....	749,691	141,477	1910.....	199,563	1923.....	232,451	16,455
1898.....	555,000	100,000	1911.....	223,758	1924.....	209,353	15,421
1899.....		100,000	1912.....	172,465	1925.....	190,134	28,413
1900.....		75,000	1913.....	173,677	<b>Total.....</b>		<b>3,819,015</b>

Table 166.—Production in Canada, Imports and Exports of Mineral Waters, 1923, 1924 and 1925

	1923		1924		1925	
	Imp. gals.	Value	Imp. gals.	Value	Imp. gals.	Value
<b>PRODUCTION, by provinces—</b>		\$		\$		\$
Quebec.....	5,421	2,408	7,683	2,288	7,122	2,961
Ontario.....	227,030	14,047	201,670	13,133	183,012	25,452
<b>Total.....</b>	<b>232,451</b>	<b>16,455</b>	<b>209,353</b>	<b>15,421</b>	<b>190,134</b>	<b>28,413</b>
<b>IMPORTS—Mineral and aerated waters.....</b>		169,473		181,107		186,543
<b>EXPORTS—Mineral and aerated waters.....</b>		192,261		109,735		12,402

## NATRO-ALUNITE

The Alunite Chemical Corporation, Limited, shipped 20 tons of natro-alunite from a deposit at Kyuquot sound on the west coast of Vancouver island, British Columbia. The treatment of this material consists in crushing, grinding and roasting; the resultant product, calcined alunite may be used as a fertilizer because of the potash content.

## NATURAL GAS

Natural gas production in Canada during 1925 totalled 16,902,897 thousand cubic feet valued at \$6,833,005. While the quantity of natural gas produced in 1925 has been exceeded in previous years the value recorded for 1925 was considerable in excess of the total for any preceding year. In 1924, the total production was 14,881,336 thousand cubic feet with a valuation of \$5,708,636. For the first time in the history of Canada, the gas fields of the province of Ontario were superseded as the leading producer, by the more recently developed fields of Alberta. The Alberta production amounted to 9,119,500 thousand cubic feet; Ontario's production was 7,143,962 thousand cubic feet. New Brunswick's output was recorded at 639,235 thousand cubic feet.

No new developments in the natural gas industry in Ontario were reported during 1925. In New Brunswick the bringing in of six productive wells in the Stony Creek field indicated considerable activity. The continued record production by the Royalite No. 4 well (wet gas producer) was the principal feature of the industry in Alberta. There was also increased drilling activity throughout the Turner Valley field.

Imports of mixed gas, natural and artificial, into Canada from the United States during 1925 totalled 63,614 thousand cubic feet valued at \$40,542.

Table 167.—Production of Natural Gas in Canada, 1892-1925

Year	Value	Year	Value	Year	M. cu. ft.	Value
	\$		\$			\$
1892.....	150,000	1903.....	202,210	1914.....	21,692,504	3,484,727
1893.....	376,233	1904.....	328,376	1915.....	20,124,162	3,706,035
1894.....	313,754	1905.....	379,561	1916.....	25,476,458	3,958,029
1895.....	423,032	1906.....	583,523	1917.....	27,408,940	5,045,298
1896.....	276,301	1907.....	815,032	1918.....	20,140,309	4,350,940
1897.....	325,873	1908.....	1,012,660	1919.....	19,937,769	4,176,037
1898.....	322,123	1909.....	1,207,029	1920.....	16,845,518	4,232,642
1899.....	387,271	1910.....	1,346,471	1921.....	14,077,601	4,594,164
1900.....	417,094	1911.....	1,907,678	1922.....	14,682,651	5,846,501
1901.....	339,476	1912.....	2,362,700	1923.....	15,960,583	5,884,618
1902.....	195,992	1913.....	2,309,381	1924.....	14,881,336	5,708,636
				1925.....	16,902,897	6,833,005
				<b>Total.....</b>		<b>73,802,402</b>

Table 168.—Production of Natural Gas in Canada, by Provinces, 1923, 1924 and 1925

Province	1923		1924		1925	
	M. cu. ft.	Value	M. cu. ft.	Value	M. cu. ft.	Value
New Brunswick.....	640,300	\$ 126,068	599,972	\$ 113,577	639,235	\$ 122,394
Ontario.....	8,128,413	4,066,244	7,150,078	3,798,381	7,143,962	3,958,006
Alberta.....	7,191,670	1,692,246	7,131,086	1,796,618	9,119,500	2,752,545
Manitoba.....	200	60	200	60	200	60
<b>Total.....</b>	<b>15,960,583</b>	<b>5,884,618</b>	<b>14,881,336</b>	<b>5,708,636</b>	<b>16,902,897</b>	<b>6,833,005</b>

## PEAT

The Alfred bog in Ontario was operated during 1925 by the Peat Fuels, Ltd., using the process developed by the Ontario-Federal Committee. The total shipments from this bog for the year amounted to 1,370 tons valued at \$8,394.

Table 169.—Production of Peat in Canada, 1900-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1900.....	400	1,200	1908.....	60	180	1916.....	300	1,500
1901.....	220	600	1909.....	60	240	1917-18.....		
1902.....	475	1,663	1910.....	841	2,604	1919.....	986	6,561
1903.....	1,100	3,300	1911.....	1,463	3,817	1920.....	4,550	18,500
1904.....	800	2,400	1912.....	700	2,900	1921.....	1,666	6,664
1905.....	80	260	1913.....	2,600	10,100	1922.....	3,000	14,500
1906.....	474	1,422	1914.....	685	2,470	1923-24.....		
1907.....	50	200	1915.....	300	1,050	1925.....	1,370	8,394
						<b>Total.....</b>	<b>22,180</b>	<b>90,675</b>

## CRUDE PETROLEUM

Production of crude petroleum in Canada in 1925 amounted to 332,001 barrels valued at \$1,250,705 as compared with 160,773 barrels valued at \$467,400 in 1924, an increase of approximately 100 per cent.

Encouraging results met the efforts of producers in the Alberta fields during 1925. In the Turner Valley field the Royalite Well No. 4, a wet-gas producer, averaged 500 barrels per day of crude naphtha. A pipe-line was constructed during the year to convey this product to the Imperial Oil refinery at Calgary.

The Royalite Company is drilling two other wells in the Turner Valley field, viz.: Royalite Nos. 5 and 6. Properties formerly controlled by the Southern Alberta Oils, Limited, have been taken over by the Imperial Oil Company through its subsidiary, the Dalhousie Oils, Ltd. The McLeod Oil Company, Indiana-Alberta Oil Co., Canada Southern Oil and Refining Co., and British Petroleums, Ltd., were also producers during the year under review. Activities in the Wainwright field were centred chiefly around the operations of British Petroleums, Ltd. Drilling is still being carried on by a number of companies in the Coutts-Sweetgrass field. The Fort Norman drilling operations have been discontinued for the present. There is a possibility of a small refinery being erected at Fort Norman to supply the oil requirements of the Hudson's Bay Company in the North. The capacity of the productive well in this district is estimated at 100 barrels per day.

Col. R. B. Harkness, commissioner of gas for Ontario, reports that exploring for oil was carried on in the province during 1925 to a considerable extent. Wells were drilled in the following localities: near Mitchell in Logan township, Perth county; four miles east of Brantford, near Sixty Nine Corners, Tuscarora Township, Brant County; Thamesville, Zone township; Vaughan township, northwest of Toronto; and at Bond Lake, 20 miles north of Toronto.

In accordance with the terms of "*An Act respecting the Payment of Bounties on Petroleum*," the payment of bounty to crude petroleum producers, ceased on July 1, 1925. The terms of this Act are as follows:

The said bounty shall be paid during the periods and at the rates following, that is to say:—

"On such crude petroleum produced on or before the thirtieth day of June, one thousand nine hundred and twenty-four, a bounty of one and one-half cents per imperial gallon shall be paid;

"On such crude petroleum produced on or after the first day of July, one thousand nine hundred and twenty-four, and not later than the thirtieth day of June, one thousand nine hundred and twenty-five, a bounty of three-quarters of one cent per imperial gallon shall be paid.

On such crude petroleum produced on and after the first day of July, one thousand nine hundred and twenty-five, no bounty shall be paid."

In the petroleum industry, Canadian interest centres in the refining end rather than in the production of crude oil. In 1925, Canadian refineries treated about 12 million gallons of oil from Canadian wells and about 433 million gallons of imported oil. In the preceding year only 5 million gallons of Canadian oil were treated. Production of gasoline at the refineries in Canada showed an increase over the production of this commodity in 1924, the total output being close to 165 million gallons, as compared with 160 million gallons in 1924.

The total value of all imports of petroleum and its products into Canada during 1925 was \$43,842,427, as compared with \$37,498,039 in 1924. Imports of asphalt and asphaltum in 1925 valued at \$317,653 are not included in the preceding total. Gasoline importations were recorded at 83,927,751 gallons, appraised at \$11,599,629; the Canadian production of refined gasoline was 164,670,072 gallons; and the exports (Canadian and foreign) were 1,611,449 gallons, leaving 246,986,374 gallons available for use in Canada during 1925.

Table 170.—Production of Crude Petroleum in Canada, 1881-1925

Year	Barrels*	Value	Year	Barrels*	Value	Year	Barrels*	Value
		\$			\$			\$
1881	368,987		1896	726,822	1,155,647	1911	291,092	357,073
1882	389,573		1897	709,857	1,011,546	1912	243,336	345,050
1883	472,866		1898	758,391	1,061,747	1913	228,080	406,439
1884	571,000		1899	808,570	1,202,020	1914	214,805	343,124
1885	587,563		1900	710,498	1,151,007	1915	215,464	300,572
1886	584,061	525,655	1901	622,392	1,008,275	1916	198,123	392,284
1887	713,728	556,708	1902	530,624	951,190	1917	213,832	542,239
1888	695,203	713,695	1903	486,637	1,048,874	1918	304,741	885,143
1889	704,690	653,600	1904	503,474	935,895	1919	240,466	736,324
1890	795,030	902,734	1905	634,095	856,028	1920	196,251	822,235
1891	755,298	1,010,211	1906	569,753	761,760	1921	187,541	641,533
1892	779,753	984,438	1907	788,872	1,057,088	1922	179,068	611,176
1893	798,406	874,255	1908	527,987	747,102	1923	170,169	522,018
1894	829,104	835,322	1909	420,755	559,604	1924	160,773	467,400
1895	726,138	1,086,738	1910	315,895	388,550	1925	332,001	1,250,705
						<b>Total</b> .....	<b>22,261,764</b>	<b>30,663,004</b>

\*35 imperial gallons. †From 1886.

Table 171.—Production of Crude Petroleum in Canada by Provinces, 1924 and 1925

Province	1924				1925			
	Barrels	Value less bounty	Bounty paid	Total value	Barrels	Value less bounty	Bounty paid	Total value
New Brunswick.....	5,561	\$ 18,520	\$ 2,793	\$ 21,313	5,376	\$ 16,805	\$ 1,951	\$ 18,756
Ontario—								
Petrolia and Enniskillen.....	60,916	149,427	24,327	173,754	52,481	133,301	7,923	141,224
Oil Springs.....	41,320	104,250	16,816	121,066	39,137	102,148	5,627	107,775
Moore Township.....	4,483	10,997	2,069	13,066	8,195	20,815	576	21,391
Sarnia Township.....	2,068	5,073	1,033	6,106	1,905	4,839	379	5,218
Plympton Township.....	525	1,288	234	1,522	1,424	3,617	184	3,801
Bothwell.....	26,700	65,655	10,728	76,383	26,243	66,657	3,680	70,337
Tilbury East.....								
West Dover.....	3,898	9,585	1,740	11,325	1,820	4,766	399	5,165
Raleigh Township.....	834	2,047	299	2,346	887	2,253	156	2,409
Dutton.....					146	381	38	419
Onondaga.....	456	1,109	213	1,322	81	210	9	219
Moza Township.....	8,862	21,074	3,605	24,679	8,397	21,328	1,181	22,509
Thamesville.....					289	734		734
Dunwich.....	1,351	3,309		3,309	855	2,172		2,172
Elgin Township.....								
Romey Township.....	2,955	7,074		7,074	1,235	3,076		3,076
Euphemia.....					39	106		106
Total for Ontario.....	154,368	380,888	61,064	441,952	143,134	366,403	20,152	386,555
Alberta.....	844	4,135		4,135	183,491	845,394		845,394
Canada.....	160,773	403,543	63,857	467,400	332,001	1,228,602	22,103	1,250,705

Table 172.—Imports into Canada and Exports of Petroleum and its Products, 1923, 1924 and 1925

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Crude petroleum in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories.....Gals.	392,185,557	17,449,032	465,958,509	20,260,488	436,258,650	23,414,837
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than .8235 but not less than .775 specific gravity at 60 degrees..... “	475,842	38,908	139,745	10,875	4,181,914	227,387
Petroleum, crude, not in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories—(from May 12, 1923)..... “	15,922	966	55,758	3,953	49,149	2,910
Petroleum (not including crude petroleum imported to be refined or illuminating or lubricating oils) .8235 specific gravity or heavier at 60 degrees temperature..... “	108,506,938	4,206,193	94,104,526	4,122,333	103,667,295	4,690,901
Petroleum, imported by miners or mining companies or concerns, for use in the concentration of ores of metals in their own concentrating establishments..... “	32,960	5,913	139,473	35,880	129,665	26,251
<b>KEROSENE AND ILLUMINATING OILS</b>						
Coal oil and kerosene, distilled, purified or refined.....Gals.	4,118,943	322,434	5,410,973	444,646	4,860,876	391,538
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon..... “	42,474	16,296	10,655	4,215	2,451	1,776
Coal oil and kerosene, distilled, known as “engine distillates”, .725 specific gravity and heavier, but not heavier than .770 specific gravity at 60 degrees temperature..... “	8,203	962	20,420	2,942	395,785	63,587
<b>LUBRICATING OILS</b>						
Lubricating oils, composed wholly or in part of petroleum, and costing less than 20 cents per gallon..... “	4,295,635	737,053	3,975,337	728,250	3,813,543	712,850
Lubricating oils, n.o.p..... “	3,901,048	1,573,897	4,521,086	1,714,403	4,632,195	1,770,739
<b>OTHER OILS</b>						
Gasoline under .725 specific gravity at 60 degrees temperature..... “	35,845,251	5,134,286	56,389,078	7,138,561	58,993,020	8,388,057
Gasoline .725 specific gravity but not heavier than .770 specific gravity at 60 degrees temperature..... “	13,927,843	1,993,596	17,084,248	2,166,847	24,897,661	3,204,479
Gasoline, n.o.p..... “	177,566	32,510	284,115	38,745	37,070	7,093
All other oils, n.o.p..... “	248,888	86,958	260,901	119,088	204,633	109,348
<b>OTHER PRODUCTS OF PETROLEUM</b>						
Grease, axle.....Lb.	2,981,849	176,216	2,853,720	165,694	3,776,077	230,151
Paraffine wax..... “	1,034,921	63,695	837,317	65,782	1,601,505	124,234
Paraffine wax candles..... “	176,487	32,516	202,565	36,884	208,887	46,257
Vaseline and all similar preparations of petroleum, for toilet, medicinal or other purposes..... “		268,267		195,457		216,464
Petroleum, products of, n.o.p.....Gals.	1,712,665	299,388	1,298,590	242,996	1,243,176	213,577
<b>Total.....</b>		<b>32,439,326</b>		<b>37,498,039</b>		<b>43,842,427</b>
<b>EXPORTS—</b>						
Oil, coal and kerosene, crude.....Gals.	2,384,899	138,381	18,263,236	529,497	7,375,163	346,512
Oil, coal and kerosene, refined..... “	1,450,051	139,924	1,525,427	165,520	1,508,636	155,783
Oil, gasoline and naphtha..... “	1,217,298	263,326	1,403,716	256,965	1,568,855	333,330
Oil, mineral, n.o.p..... “	1,200,347	223,511	627,671	161,259	1,473,779	287,463
Wax, mineral.....Cwt.	66,274	206,575	33,171	147,810	14,541	82,999
<b>Total.....</b>		<b>971,717</b>		<b>1,261,052</b>		<b>1,206,067</b>

**Petroleum Refinery Statistics.**—As a matter of interest there has been tabulated a record of the crude petroleum and other minerals used in the oil refineries of Canada during the past three years and a list showing the quantities and values of the refined products made. Detailed statistics covering Canadian petroleum refineries will be found in the Bureau's report on the *Manufactures of Non-Metallic Minerals*.

**Table 173.—Materials Used and Products Made by the Oil Refineries of Canada, 1923, 1924 and 1925**

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>MATERIALS USED—</b>						
Crude oil, product of Canadian wells.....	Imp. gal. 5,906,028	458,609	5,172,903	403,099	12,337,192	1,511,181
Crude oil, imported.....	402,904,711	33,184,017	361,971,731	33,018,299	432,778,502	33,344,004
Sulphuric acid (66° Be) (not made by firm reporting).....	Lb. 65,922,858	690,152	57,603,733	605,383	42,843,604	447,528
Sulphur (not used in acid manufacture).....	" 61,814	1,733	90,955	2,625	141,265	3,988
Caustic soda.....	" 3,084,651	128,421	3,796,826	146,842	4,220,371	154,150
Litharge.....	" 328,185	28,794	315,723	30,197	549,450	59,825
Clay.....	" 480,375	7,929				
Other materials.....		1,935,651		2,462,847		777,243
Shipping containers.....						1,516,384
<b>Total</b> .....		<b>36,435,306</b>		<b>36,669,292</b>		<b>37,814,303</b>
<b>PRODUCTS MADE—</b>						
Gasoline.....	Imp. gal. 124,156,380	22,153,254	160,045,739	25,799,219	164,670,072	27,589,037
Petroleum spirits.....	" 1,038,625	144,484	788,571	132,093	1,137,787	199,618
Kerosene.....	" 67,396,674	8,774,371	61,308,467	7,486,042	45,026,459	5,966,913
Fuel and gas oils.....	" 139,682,570	7,973,766	177,123,232	9,076,746	172,387,242	9,652,255
Lubricating oils.....	" 13,741,896	2,696,768	14,341,920	2,585,717	14,801,986	2,697,142
Grease.....	Lb. 10,599,391	221,420	10,004,590	184,655	9,076,336	184,033
Petroleum coke.....	Tons 34,020	300,524	33,102	270,403	34,018	218,691
Wax and candles.....	Lb. 10,484,436	484,416	9,112,143	551,434	15,736,867	734,322
Other products.....		2,822,503		2,591,038		2,530,604
<b>Total</b> .....		<b>45,571,506</b>		<b>48,677,347</b>		<b>49,802,615</b>

## PHOSPHATE

The production of phosphate in Canada during 1925 amounted to 16 tons valued at \$189. This shipment was made from crude material taken from an old mine dump.

Canadian importations, consisting almost entirely of Florida phosphate, totalled 14,002 tons valued at \$62,107 in 1925; the Customs' records showed imports of 11,718 tons at \$56,965 in 1924.

**Table 174.—Production of Phosphate in Canada, 1886-1925**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	20,495	304,338	1900.....	1,415	7,105	1913.....	385	3,643
1887.....	23,690	319,815	1901.....	1,033	6,280	1914.....	954	7,275
1888.....	22,485	242,285	1902.....	856	4,953	1915.....	217	2,502
1889.....	30,988	316,662	1903.....	1,329	8,214	1916.....	203	2,514
1890.....	31,753	361,045	1904.....	817	4,590	1917.....	149	1,486
1891.....	23,588	241,603	1905.....	1,300	8,425	1918.....	140	1,206
1892.....	11,932	157,424	1906.....	850	6,375	1919.....	24	331
1893.....	8,198	70,942	1907.....	824	6,018	1920.....		
1894.....	6,861	41,166	1908.....	1,596	14,794	1921.....	30	450
1895.....	1,822	9,565	1909.....	998	8,054	1922.....	190	1,796
1896.....	570	3,420	1910.....	1,478	12,578	1923.....	30	600
1897.....	908	3,984	1911.....	621	5,206	1924.....		
1898.....	733	3,665	1912.....	164	1,640	1925.....	16	189
1899.....	3,000	18,000				<b>Total</b> .....	<b>202,642</b>	<b>2,210,138</b>

Table 175.—Production in Canada, Imports and Exports of Phosphate, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	30	600			16	189
<b>Total</b> .....	<b>30</b>	<b>600</b>			<b>16</b>	<b>189</b>
IMPORTS—						
Phosphate rock.....	15,845	86,192	11,718	56,965	14,002	62,107
Acid phosphate (a).....	1,524	189,625	1,825	230,676	1,752	208,380
Phosphorus.....	74	68,684	55	56,455	34	36,414
Phosphor tin and bronze.....	223	195,491	191	148,856	279	238,002
Superphosphate (b).....		278,301		405,937		715,451
EXPORTS—Phosphate rock.....					25	500

(a) Probably refined phosphate of lime and phosphate of soda.

(b) Probably for use as fertilizer.

## PYRITES

The production of pyrites ore (iron and copper sulphides) in Canada during 1925 was 15,605 tons valued at \$58,899. Of this, Quebec produced 12,250 tons; Ontario, 685 tons, and British Columbia, 2,670 tons. The average price for this material was \$3.78 per ton. The sulphur content of the shipments amounted to 7,587 tons; the percentage of sulphur varied from 38 per cent to 50 per cent with an average of 48.6 per cent for Canada.

Imports of brimstone or sulphur in roll or flour, in 1925 were recorded at 146,609 tons worth \$1,982,788. According to Customs' records, the sulphur content of pyritic ores exported was 13 tons valued at \$150.

Table 176.—Production of Pyrites in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	42,906	193,077	1900.....	40,031	155,164	1913.....	158,568	521,131
1887.....	38,043	171,194	1901.....	35,261	130,544	1914.....	228,314	744,508
1888.....	63,479	285,656	1902.....	35,616	138,939	1915.....	286,038	985,190
1889.....	72,225	307,292	1903.....	33,982	127,713	1916.....	309,251	1,084,095
1890.....	49,227	123,067	1904.....	37,180	134,032	1917.....	416,649	1,610,762
1891.....	67,731	203,193	1905.....	33,339	125,486	1918.....	411,616	1,705,219
1892.....	59,770	179,310	1906.....	42,743	169,990	1919.....	176,487	522,704
1893.....	58,542	175,626	1907.....	46,243	212,491	1920.....	174,744	719,110
1894.....	40,527	121,581	1908.....	47,336	224,824	1921.....	33,368	116,326
1895.....	34,198	102,594	1909.....	64,644	222,514	1922.....	18,143	74,303
1896.....	33,715	101,155	1910.....	53,870	187,062	1923.....	28,591	113,020
1897.....	38,910	116,730	1911.....	82,666	365,820	1924.....	23,552	95,620
1898.....	32,218	128,872	1912.....	81,526	314,081	1925.....	15,605	58,899
1899.....	27,687	110,748				<b>Total</b> .....	<b>3,574,539</b>	<b>13,179,993</b>

Table 177.—Production in Canada, Imports and Exports of Pyrites, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Quebec.....			4,032	10,619	12,250	36,750
Ontario.....	25,134	99,716	11,429	44,542	685	8,799
British Columbia.....	3,437	13,304	8,091	40,459	2,670	13,350
<b>Total</b> .....	<b>28,591</b>	<b>113,020</b>	<b>23,552</b>	<b>95,620</b>	<b>15,605</b>	<b>58,899</b>
Sulphur content.....	11,073		9,742		7,587	
IMPORTS—						
Brimstone or sulphur, crude or in roll or flour.....	135,767	1,803,550	131,546	1,776,978	146,609	1,982,788
EXPORTS—						
Sulphur contained in pyrites.....	9,670	46,514	219	1,081	13	150

**Sulphuric Acid.**—Statistics collected from firms manufacturing sulphuric acid in Canada during 1925 gave the production of the commodity in terms of the standard grades of 50° Bé, 60° Bé, and 66° Bé. For comparative purposes it has been deemed advisable to reduce the first two grades to their equivalent in 66° Bé acid.

Importations of sulphuric acid into Canada during 1925 were comparatively negligible; exports amounted to 19,180 tons as compared with 7,678 tons in the preceding year.

**Table 178.—Production,\* Imports and Exports of Sulphuric Acid, 1923, 1924 and 1925**

	1923		1924 <sup>a</sup>		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Sulphur used.....	21,564	434,687	16,065	295,101	26,202	359,519
Pyrites used.....	18,615	89,287	19,706	91,202	15,114	76,487
Acid made.....	87,150	1,521,321	71,991	1,288,344	83,396	1,363,618
<b>IMPORTS of acid.....</b>	291	10,008	47	7,609	52	7,821
<b>EXPORTS of acid.....</b>	12,203	200,206	7,678	132,139	19,180	250,096

\* Expressed in terms of 66° Bé acid. Record includes a small production of oleum and other grades, the strength of which is not specified. An approximate estimate of production in terms of 50° acid will be obtained by increasing these figures by 50 per cent.

### QUARTZ

Quartz production in 1925 amounted to 197,224 tons valued at \$363,612 as compared with 150,896 tons valued at \$323,156 in 1924. This was an increase of 30.7 per cent in quantity and 12.5 per cent in value.

Ontario's production increased from 111,645 tons in 1924 to 188,560 tons in 1925, but the output from Quebec deposits was only equivalent to one-third of the 1924 output. British Columbia's output was 853 tons while Nova Scotia produced 1,352 tons during the year.

Imports of silex or crystallized quartz into Canada during 1925 amounted to 2,196 tons with a valuation of \$39,301, and flint importations were recorded at 3,601 tons valued at \$36,936.

**Table 179.—Production of Quartz in Canada, 1890-1924**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	200	1,000	1907.....	56,585	124,148	1917.....	216,288	496,182
1891-2.....			1908.....	44,741	52,830	1918.....	268,155	629,813
1893.....	100	500	1909.....	56,924	71,285	1919.....	94,991	527,635
1894-5.....			1910.....	88,205	91,951	1920.....	128,295	467,821
1896.....	10	50	1911.....	60,526	83,865	1921.....	100,350	312,947
1897.....			1912.....	100,242	195,216	1922.....	109,947	208,598
1898.....	284	570	1913.....	78,261	169,842	1923.....	264,076	599,250
1899.....	600	1,260	1914.....	54,148	84,583	1924.....	150,896	323,156
1900-1905.....			1915.....	127,108	205,153	1925.....	197,224	363,612
1906.....	48,376	65,765	1916.....	136,745	251,226	<b>Total.....</b>	<b>2,383,277</b>	<b>5,328,258</b>

**Table 180.—Production in Canada, and Imports of Quartz, 1923, 1924 and 1925**

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Nova Scotia.....					1,352	6,760
Quebec.....	13,376	68,936	17,893	87,267	6,459	30,064
Ontario.....	225,110	483,285	111,645	192,855	188,560	324,526
British Columbia.....	25,590	47,029	21,358	43,034	853	2,262
<b>Total.....</b>	<b>264,076</b>	<b>599,250</b>	<b>150,896</b>	<b>323,156</b>	<b>197,224</b>	<b>363,612</b>
<b>IMPORTS—</b>						
Silex.....	2,303	57,940	1,941	49,552	2,196	39,301
Flint.....	6,327	81,704	6,016	64,753	3,601	36,936

## SALT

In 1925, the production of salt in Canada exceeded all previous records. Shipments during the year totalled 233,746 tons as compared with 207,979 tons produced in 1924. There was a considerable decline in value during the year, the average price for all grades being \$6.04 per ton, as against \$6.61 in 1924.

The production in Ontario amounted to 226,315 tons or 97 per cent of the total; Nova Scotia and Alberta contributed the remainder. The year's shipment of 833 tons from Alberta came from the Fort McMurray district, where development work in the salt industry has been carried on for a considerable time. Nova Scotia's production consisted of salt mined at Malagash.

Customs' records show that 193,625 tons, worth \$1,077,321, were brought into Canada during 1925. Exports of Canadian salt totalled 2,324 tons while in the preceding year only 965 tons were shipped from Canada.

Table 181.—Production of Salt in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	62,359	227,195	1900.....	62,055	279,458	1914.....	107,038	493,648
1887.....	60,173	166,394	1901.....	59,428	262,328	1915.....	119,900	600,226
1888.....	59,070	185,460	1902.....	64,456	292,581	1916.....	132,903	717,653
1889.....	32,832	129,547	1903.....	62,452	297,517	1917.....	138,909	1,047,792
1890.....	43,754	198,857	1904.....	69,477	321,778	1918.....	131,727	1,285,039
1891.....	45,021	161,179	1905.....	67,340	320,858	1919.....	148,301	1,397,929
1892.....	45,486	162,041	1906.....	76,720	329,130	1920.....	209,855	1,544,724
1893.....	62,324	195,926	1907.....	72,697	342,315	1921.....	164,658	1,673,685
1894.....	57,199	170,687	1908.....	79,975	378,798	1922.....	181,794	1,628,323
1895.....	52,376	160,455	1909.....	84,037	415,219	1923.....	202,397	1,713,516
1896.....	43,960	169,693	1910.....	84,092	409,624	1924.....	207,979	1,374,780
1897.....	51,348	225,730	1911.....	91,582	443,004	1925.....	233,746	1,410,697
1898.....	57,142	248,639	1912.....	95,053	459,582			
1899.....	59,339	254,390	1913.....	100,791	491,280	<b>Total.....</b>	<b>3,781,745</b>	<b>22,587,677</b>

Table 182.—Production of Salt in Canada, by Grades, 1924 and 1925

	1924			1925		
	Quantity manu- factured	Quantity sold	Value of salt sold (not including packages)	Quantity manu- factured	Quantity sold	Value of salt sold (not including packages)
	Tons	Tons	\$	Tons	Tons	\$
Table and dairy.....	41,198	41,134	663,296	47,452	46,790	713,571
Common fine.....	37,701	36,706	272,301	34,383	33,197	186,297
Common coarse.....	36,205	34,345	266,895	46,637	43,931	312,107
Land salt.....	4,920	4,862	23,889	5,133	5,125	21,826
Other grades.....	7,654	7,873	65,340	11,799	11,203	83,396
Brine for chemical works (salt equivalent sold or used).....	83,059	83,059	83,059	93,500	93,500	93,500
<b>Total.....</b>	<b>210,737</b>	<b>207,979</b>	<b>1,374,780</b>	<b>238,904</b>	<b>233,746</b>	<b>1,410,697</b>
<b>Value of packages.....</b>	<b>\$548,631</b>			<b>\$548,528</b>		

Table 183.—Production in Canada, Imports and Exports of Salt, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION.....</b>	<b>202,397</b>	<b>1,713,516</b>	<b>207,979</b>	<b>1,374,780</b>	<b>233,746</b>	<b>1,410,697</b>
<b>IMPORTS—</b>						
Salt, for the use of the sea or gulf fisheries <sup>1</sup>	65,118	317,773	68,199	332,649	80,398	329,820
Salt in bulk n.o.p. <sup>2</sup>	38,799	455,306	43,508	462,184	73,166	327,364
Salt n.o.p., in bags, barrels, etc. <sup>3</sup>	67,941	294,526	71,179	339,557	40,061	420,137
<b>Total imports.....</b>	<b>171,858</b>	<b>1,067,605</b>	<b>182,886</b>	<b>1,134,390</b>	<b>193,625</b>	<b>1,077,321</b>
<b>EXPORTS.....</b>	<b>861</b>	<b>10,201</b>	<b>965</b>	<b>10,795</b>	<b>2,324</b>	<b>26,678</b>
<b>APPARENT CONSUMPTION OF SALT<sup>4</sup>.....</b>	<b>373,394</b>	<b>2,770,920</b>	<b>389,900</b>	<b>2,498,375</b>	<b>425,047</b>	<b>2,461,340</b>

<sup>1</sup>Duty 5 cents per 100 pounds; <sup>2</sup>Duty 7½ cents per 100 pounds; <sup>3</sup>Free—Imported for use of sea or gulf fisheries.  
<sup>4</sup>Sum of production and imports, less exports.

Table 184.—\*World's Production of Salt, 1913, and 1921-1925

(Long tons)

Country	1913	1921	1922	1923	1924	1925
<b>BRITISH EMPIRE</b>						
United Kingdom.....	2,203,732	1,382,629	1,889,176	1,886,882	2,045,762	1,933,590
Mauritius.....	(a)	1,800	1,500	1,500	1,500	1,500
Nigeria.....	394		400	400		400
Somaliland.....	(a)	892	1,547	1,707	1,303	(a)
South-West Africa Territory.....	(a)	(a)	(a)	(a)	335	425
Sudan.....	(a)	(a)	9,000	9,000	9,000	9,000
Tanganyika Territory.....	(a)	(a)	2,389	1,887	4,556	4,000
Union of South Africa.....	42,837	60,000	74,609	61,188	(a)	(a)
Canada.....	89,992	147,016	162,316	180,711	185,695	208,702
<b>West Indies—</b>						
Bahamas.....	(a)	3,150	3,030	2,680	1,570	1,291
Turks & Caicos Islands.....	(a)	(a)	65,650	58,060	52,327	62,432
Ceylon.....	(a)	14,707	38,997	28,279	(a)	(a)
Cyprus.....	(a)	885	2,974	766		1
India.....	1,472,764	1,681,717	1,861,210	1,900,829	1,812,722	(a)
Weihaiwei.....	(a)	1,500	2,000	2,000	2,000	2,000
Australia.....	64,981	56,492	98,657	98,286	110,687	126,251
<b>Total.....</b>	<b>3,874,700</b>	<b>3,350,788</b>	<b>4,213,455</b>	<b>4,234,175</b>	<b>4,227,869</b>	<b>2,349,592</b>
<b>FOREIGN COUNTRIES</b>						
Austria.....	358,887	75,813	142,079	81,953	109,382	128,705
Bulgaria.....	(a)	(a)	20,000	(a)	(a)	(a)
Czechoslovakia.....	See Austria	(a)	126,118	131,925	122,768	124,000
France.....	1,261,364	750,980	1,031,761	1,127,031	1,267,881	1,327,049
Germany.....	2,034,391	2,158,345	2,995,947	1,845,404	1,941,973	2,188,347
Greece.....	18,906	64,000	66,415	58,945	84,000	(a)
Italy.....	633,722	505,337	777,608	752,376	794,346	900,922
Jugoslavia.....	26,843	23,000	43,167	45,000	48,000	53,623
Netherlands.....		25,056	27,879	25,969	31,895	34,191
Poland.....	See Russia	296,765	290,655	357,468	636,059	(a)
Rumania.....	329,613	229,076	280,628	301,684	297,895	(a)
Russia.....	1,963,405	990,500	782,305	924,016	998,443	(a)
Spain.....	600,612	504,893	669,937	704,322	952,744	(a)
Switzerland.....	506,718	105,910	63,253	66,951	(a)	(a)
Algeria.....	26,566	(a)	19,883	24,676	(a)	(a)
Angola.....	(a)	2,141	(a)	(a)	(a)	(a)
Belgian Congo.....	(a)	80	(a)	80	(a)	(a)
Egypt.....	79	151,224	183,823	154,758	206,584	207,645
Eritrea.....	(a)	(a)	20,000	20,000	20,000	20,000
Tripoli (exports).....	(a)	(a)	11,606	(a)	(a)	(a)
Tunis.....	(a)	21,739	51,000	72,000	(a)	(a)
Dutch West Indies.....	13,201	(a)	18,172	11,605	(a)	(a)
Mexico.....	65,923	(a)	66,000	66,000	(a)	(a)
Panama.....	(a)	666	813	(a)	(a)	(a)
United States.....	4,298,638	4,447,459	6,065,044	6,366,708	6,074,210	6,604,909
Argentina.....	54,034	(a)	92,200	(a)	(a)	(a)
Chile.....	19,244	38,832	33,201	37,627	53,513	(a)
Colombia.....	28,534	(a)	29,000	29,000	29,000	29,000
Peru.....	24,040	25,927	25,706	26,096	25,000	(a)
Venezuela.....	(a)	(a)	(a)	30,000	30,000	30,000
China including Kwantung Peninsula.....	(a)	2,042,000	2,000,000	2,000,000	2,000,000	2,000,000
Dutch East Indies.....	100,449	(a)	166,963	122,066	(a)	(a)
Formosa.....	(a)	96,835	(a)	235,400	134,000	(a)
French Indo-China.....		(a)	(a)	11,215	4,184	5,861
Japan.....	702,584	505,904	654,407	472,195	626,929	(a)
Portuguese India.....	11,807	(a)	(a)	12,000	12,000	12,000
Siam.....	(a)	29,353	26,123	32,428	39,923	34,639
Turkey.....	(a)	(a)	100,000	100,000	100,000	100,000
Philippine Islands.....	19,186	(a)	32,350	30,803	(a)	(a)
<b>Total.....</b>	<b>13,118,424</b>	<b>13,091,835</b>	<b>16,914,043</b>	<b>16,277,701</b>	<b>16,640,729</b>	<b>13,800,891</b>
<b>Grand Total.....</b>	<b>16,993,124</b>	<b>16,442,623</b>	<b>21,127,498</b>	<b>20,511,876</b>	<b>20,868,598</b>	<b>16,150,483</b>

\*Source—Imperial Mineral Resources Department publications. 1925 figures obtained directly from the statistical bureaus of the different countries.

(a) Data not available.

## SODIUM CARBONATE

The production of sodium carbonate in 1925 amounted to 1,120 tons valued at \$8,140 as against 510 tons at \$5,173 in 1924. Commercial deposits of this commodity now being worked occur on the line of the Pacific Great Eastern Railway in the Clinton Mining District, British Columbia, in the vicinity of 70 Mile House.

Soda ash from salt brine is made in Canada on a very large scale by Brunner-Mond Company, Limited, at Amherstburg, Ontario.

Sodium carbonate is used largely in chemical and hydro-metallurgical plants. Its principal uses are in the manufacture of glass, soap and paper, the bleaching and washing of linen, cotton, wool, etc., and the dyeing and printing of fabrics. Sodium carbonate has been utilized for some time as a means of removing, and of preventing the formation of boiler scale.

### SODIUM SULPHATE

Natural deposits of sodium sulphate in the province of Saskatchewan were operated during the year 1925. The total quantity of natural sodium sulphate sold during the year amounted to 3,876 tons valued at \$19,380, as against 1,083 tons valued at \$6,004 in the previous twelve months.

Importations of salt cake totalled 34,215 tons at \$471,931, as against 36,022 tons appraised at \$673,322 in the previous year. Bisulphate of soda, or nitre cake, amounting to 21,873 tons at \$72,939 and glauber's salt to a total of 518 tons at \$8,177 were also imported.

**Table 185.—Production and Imports of Sodium Sulphate, 1923, 1924 and 1925**

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Natural Sodium Sulphate—						
Crude.....	210	1,050	965	4,825	3,876	19,380
Refined.....	523	9,139	118	1,179	.....	.....
Artificial Sodium Sulphate—						
Sodium sulphate.....	2,376	57,621	1,648	32,948	2,248	31,529
Glauber's salt.....	2,315	61,446	1,458	36,602	1,442	33,559
<b>IMPORTS—</b>						
Soda, bisulphate of, or nitre cake—(From						
May 12, 1923).....	20,152	91,940	18,859	87,961	21,873	72,939
Soda, sulphate of, crude, known as salt						
cake.....	30,967	684,604	36,022	673,322	34,215	471,931
Glauber's salt.....	521	11,542	906	14,684	518	8,177

### TALC AND SOAPSTONE

During 1925 there was an appreciable advance in the production of talc and soapstone in Canada. Sales for the year totalled 14,474 tons worth \$205,835 as against 11,332 tons valued at \$154,480 in 1924.

Ontario's production of talc was derived from deposits in Hastings county. Most of the shipments from Quebec consisted of soapstone blocks for use in lining the alkali recovery furnaces of sulphate (kraft) pulp mills. A small tonnage of ground talc was shipped from a deposit at Wolf Creek, Victoria Mining Division, British Columbia.

Imports of talc or soapstone into Canada in 1925 were recorded at 4,568 tons appraised at \$91,288. Exports of refined talc during the same period, amounted to 10,461 tons at \$124,217.

The following quotation is from a report on "*Talc and Soapstone*," by Hugh S. Spence, Mines Branch, Ottawa.

"The soapstone used in Canadian sulphate pulp mills is almost all imported Alberene stone from Virginia. It is difficult to obtain a structurally strong stone that will stand up under the combined attack of heat and alkali in such furnaces, and even the Alberene stone in general use has not a very long life. From six to nine months is stated to be a good average for an Alberene stone lining. The best soapstone for the purpose is obtained from Sweden, but the expense of importation prohibits its use.

The requirements in a soapstone for sulphate pulp furnaces are: fine to medium grain, compactness and homogeneous composition, and freedom from flaws and cracks. It should consist largely of talc, and contain no carbonates (dolomite, calcite) or pyrites. The stone should possess a massive, as opposed to a schistose texture, since schistose soapstone tends to spall readily and has little strength.

The discovery of a soapstone possessing the above characteristics, in Canada, would be of considerable benefit to domestic paper mills, since the quantity used is large and the cost of the imported stone high—from \$5 to \$6 per cubic foot, laid down.

The soapstone bricks used vary in size. Common dimensions are: 12 x 12 x 6 in.; 12 x 6 x 6 in.; 12 x 6 x 3 in.; 18 x 12 x 8 in.; 18 x 12 x 12 in."

Table 186.—Production of Talc and Soapstone in Canada, 1886-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	50	400	1900.....	1,420	6,365	1914.....	10,808	40,418
1887.....	100	800	1901.....	259	842	1915.....	11,885	40,554
1888.....	140	280	1902.....	689	1,804	1916.....	13,104	49,423
1889.....	195	1,170	1903.....	990	2,739	1917.....	15,803	76,539
1890.....	917	1,239	1904.....	840	1,875	1918.....	18,169	119,197
1891.....			1905.....	500	1,800	1919.....	18,642	116,295
1892.....	1,374	6,240	1906.....	1,234	3,030	1920.....	21,671	166,934
1893.....	717	1,920	1907.....	1,534	4,602	1921.....	10,124	144,565
1894.....	916	1,640	1908.....	1,016	3,048	1922.....	13,195	188,458
1895.....	475	2,138	1909.....	4,350	10,300	1923.....	10,366	150,507
1896.....	410	1,230	1910.....	7,112	22,308	1924.....	11,332	154,480
1897.....	157	350	1911.....	7,300	22,100	1925.....	14,474	205,835
1898.....	405	1,000	1912.....	8,270	23,132			
1899.....	450	1,960	1913.....	12,250	45,980	<b>Total.....</b>	<b>223,643</b>	<b>1,623,497</b>

Table 187.—Production of Talc and Soapstone in Canada and Exports of Talc, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Soapstone.....	607	20,843	449	20,273	768	32,655
Talc.....	9,759	129,664	10,883	134,207	13,706	173,180
<b>Total.....</b>	<b>10,366</b>	<b>150,507</b>	<b>11,332</b>	<b>154,480</b>	<b>14,474</b>	<b>205,835</b>
<b>EXPORTS.....</b>	<b>7,233</b>	<b>99,239</b>	<b>7,876</b>	<b>98,571</b>	<b>10,461</b>	<b>124,217</b>

Table 188.—\*World's Production of Talc and Soapstone, 1913, and 1921-1925

(Long tons)

Country	1913	1921	1922	1923	1924	1925
<b>BRITISH EMPIRE</b>						
United Kingdom.....	40		50	186		
Union of South Africa.....		527	304	317	670	(a)
Canada.....	10,937	9,039	11,781	9,255	10,118	12,923
India.....	2,524	5,703	4,754	7,024	2,852	(a)
Australia.....	104	318	468	622	859	1,052
<b>Total.....</b>	<b>13,605</b>	<b>15,587</b>	<b>17,357</b>	<b>17,404</b>	<b>14,499</b>	<b>13,975</b>
<b>FOREIGN COUNTRIES</b>						
Austria (exports).....	7,953	7,884	13,294	7,369	9,433	12,676
China.....			284	188	218	50
France.....	59,208	34,183	47,396	47,967	(a)	(a)
Germany (Bavaria).....		6,513	4,440	1,876	3,933	3,405
Greece.....				130	(a)	(a)
Italy.....	44,622	20,693	26,059	30,649	28,171	33,310
Norway (exports).....	2,392	2,765	7,695	8,764	11,596	8,887
Spain.....	4,336	1,097	3,029	1,951	1,434	(a)
Sweden.....			2,030	2,391	2,827	(a)
United States.....	156,994	108,916	177,396	175,618	181,983	168,603
Uruguay (exports).....		1,727	(a)	(a)	(a)	(a)
Japan.....			48,244	35,341	41,194	(a)
<b>Total.....</b>	<b>275,505</b>	<b>183,778</b>	<b>329,867</b>	<b>312,244</b>	<b>280,789</b>	<b>226,931</b>
<b>Grand Total.....</b>	<b>289,110</b>	<b>199,365</b>	<b>347,221</b>	<b>329,648</b>	<b>295,288</b>	<b>240,906</b>

\* Source.—Imperial Mineral Resources Department publications. 1925 figures obtained directly from the statistical bureaus of the different countries.

(a) Data not available.

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

Corresponding with the increase in the value of construction contracts awarded during 1925, the total value of structural materials and clay products made in Canada (from domestic raw materials) increased 6.4 per cent to \$37,649,234. In the previous year the total production was valued at \$35,380,869.

Construction of buildings and bridges, the building of roads, the maintenance of railroads and the development of power schemes provide the necessary markets for the structural materials and clay products from Canadian quarries and plants.

Increased output values were recorded in all provinces with the exception of New Brunswick, Ontario and Saskatchewan. Ontario and Quebec were the principal producing provinces, accounting for 30.2 million dollars in an aggregate for Canada of 37.6 million dollars. British Columbia's production was valued at 2.8 million dollars; Manitoba's 1.76 million dollars; Alberta's, 1.68 million dollars; Nova Scotia, New Brunswick, Saskatchewan and Prince Edward Island followed in the order named.

Building and construction contracts awarded in Canada during 1925, as reported by the *MacLean Building Review* were valued at \$297,973,000, an advance of 7.8 per cent over the total for 1924. A classification of these contracts was as follows: residential projects, \$96,489,900; business, \$73,067,100; industrial, \$40,007,300; and engineering, \$88,408,700. Quebec was the leading province, mainly because of its unprecedented increase in industrial building and power development. Ontario followed with a somewhat lower total than in 1924. Of the other provinces, Prince Edward Island, Nova Scotia, New Brunswick and Manitoba showed increases; while there was a decrease of about 7 per cent in British Columbia; there were also appreciable declines in Alberta and Saskatchewan.

Costs of building materials in Canada during 1925 were very stable. The Bureau of Statistics index number of prices applying to 32 building and construction materials (base 100 in 1913) showed only a slight variation during the year, ranging from 152.4 in January to a maximum of 154.6 in February, thence by a gradual recession to 152.4 in December.

Among the structural materials and clay products the chief items were portland cement, and clay products; stone was next in point of value, followed by sand and gravel and lime.

Availability of hydro-electric power has proved a great stimulus to manufacturing in the southern part of Ontario and the mining industry's great progress in the northern part of the province, has followed the development of adequate power facilities in that area. Water-power development in Quebec has proceeded apace in recent years and has been the forerunner of industrial expansion on a magnificent scale. Recent road-building programs have made transportation a smaller factor in production and marketing costs, and at the same time have provided wider markets for stone, cement and other materials used in their construction.

Production of structural materials will undoubtedly increase as the years go by; advances in manufacturing and in the primary industries, particularly mining, will continue to provide extensive home markets for such materials, so that, while there may be years of apparent depression in construction, succeeding periods should more than compensate for such temporary set-backs.

**Table 189.—Production Values of Structural Materials and Clay Products in Canada, 1923, 1924 and 1925**

Province	1923	1924	1925
	\$	\$	\$
Prince Edward Island.....	4,429	4,588	8,495
Nova Scotia.....	654,191	528,309	610,727
New Brunswick.....	467,118	321,994	298,763
Quebec.....	11,968,006	11,272,539	13,179,513
Ontario.....	18,896,053	17,429,449	17,089,582
Manitoba.....	1,380,779	1,161,491	1,767,050
Saskatchewan.....	178,946	234,325	184,757
Alberta.....	1,568,760	1,657,742	1,686,545
British Columbia.....	2,633,099	2,770,432	2,823,802
<b>Canada.....</b>	<b>37,751,381</b>	<b>35,380,869</b>	<b>37,649,234</b>

Table 190.—Summary Statistics of Structural Materials and Clay Products, 1923, 1924 and 1925

Item		Production	Imports	Exports	Apparent consumption
		\$	\$	\$	\$
Cement, portland.....	1923	15,064,661	75,294	824,811	14,315,144
	1924	13,398,411	69,320	213,845	13,253,886
	1925	14,046,704	63,067	1,498,495	12,611,276
Clay and clay products.....	1923	10,483,016	8,172,662	584,843	18,070,835
	1924	9,215,077	7,158,371	543,572	15,829,876
	1925	9,529,691	7,478,084	220,818	16,786,957
Lime.....	1923	3,266,608	55,820	428,286	2,894,142
	1924	3,178,841	46,578	411,122	2,813,997
	1925	3,387,652	47,639	312,168	3,123,123
Sand and gravel.....	1923	3,016,518	247,388	182,750	3,081,156
	1924	3,181,083	442,676	210,496	3,413,263
	1925	3,220,410	537,237	198,485	3,559,162
Slate.....	1923	17,289	265,846	.....	283,135
	1924	.....	220,402	.....	220,402
	1925	.....	205,507	.....	205,507
Stone.....	1923	5,903,289	1,133,894	222,240	6,814,943
	1924	6,407,757	913,325	170,113	7,150,969
	1925	7,464,777	824,992	138,392	8,151,377
<b>Total.....</b>	<b>1923</b>	<b>37,751,381</b>	<b>9,950,904</b>	<b>2,242,930</b>	<b>45,459,355</b>
	<b>1924</b>	<b>35,380,869</b>	<b>8,859,672</b>	<b>1,549,148</b>	<b>42,682,393</b>
	<b>1925</b>	<b>37,649,234</b>	<b>9,156,526</b>	<b>2,368,358</b>	<b>44,437,402</b>

## CEMENT

In 1925, shipments of cement from Canadian mills showed an appreciable advance over the total recorded for the previous twelve months. Sales during 1925 totalled 8,116,597 barrels valued at \$14,046,704 as compared with 7,498,624 barrels at \$13,398,411 shipped in 1924.

Cement is produced in Quebec, Ontario, Manitoba, Alberta and British Columbia. There was formerly a production of puzzolan cement from blast furnace slag in Nova Scotia, but this has been discontinued in recent years. In 1925, Ontario was the leading producer, sales in that province amounting to 3,462,358 barrels valued at \$5,253,911. While slightly below the total quantity for Ontario, sales from Quebec mills amounted to 3,365,802 barrels. British Columbia mills sold 485,185 barrels for \$1,151,344, and Manitoba came next with 407,395 barrels worth \$1,037,929. Alberta sales totalled 395,857 barrels at \$913,529.

By provinces, the average selling price per barrel, f.o.b. plant, was as follows: Quebec, \$1.69; Ontario, \$1.52; Manitoba, \$2.55; Alberta, \$2.31; and British Columbia, \$2.37.

Importations during 1925 amounted to 21,849 barrels averaging \$2.89 per barrel as against an average price of \$2.50 in 1924. Exports of Portland cement totalled 997,915 barrels invoiced at \$1,498,495.

Cement consumption in Canada during the year was considerably lower than in 1924. In comparison with 1913, the 1925 consumption showed a decrease of 19.9 per cent.

Table 191.—Production of Cement in Canada, 1887-1925

Year	Barrels	Value	Year	Barrels	Value	Year	Barrels	Value
		\$			\$			\$
1887.....	69,843	81,909	1900.....	417,552	662,910	1913.....	8,658,805	11,019,418
1888.....	50,668	35,593	1901.....	450,394	660,030	1914.....	7,172,480	9,187,924
1889.....	90,474	69,790	1902.....	722,525	1,127,550	1915.....	5,681,032	6,977,024
1890.....	102,216	92,405	1903.....	719,993	1,225,247	1916.....	5,369,560	6,547,728
1891.....	93,479	108,561	1904.....	967,172	1,338,239	1917.....	4,768,488	7,724,246
1892.....	117,408	147,663	1905.....	1,360,732	1,924,014	1918.....	3,591,481	7,076,503
1893.....	158,597	194,015	1906.....	2,128,374	3,170,859	1919.....	4,995,257	9,802,433
1894.....	108,142	144,637	1907.....	2,441,868	3,781,371	1920.....	6,651,980	14,798,070
1895.....	128,294	173,675	1908.....	2,666,333	3,709,954	1921.....	5,752,885	14,195,143
1896.....	149,090	201,651	1909.....	4,067,709	5,345,802	1922.....	6,943,972	15,438,481
1897.....	205,213	275,273	1910.....	4,753,975	6,412,215	1923.....	7,543,589	15,064,661
1898.....	250,209	397,580	1911.....	5,692,915	7,644,937	1924.....	7,498,624	13,398,411
1899.....	396,753	633,291	1912.....	7,132,732	9,106,556	1925.....	8,116,597	14,046,704
<b>Total.....</b>							<b>118,187,410</b>	<b>193,942,473</b>

Table 192.—Summary Statistics of Cement in Canada, 1923, 1924 and 1925

	1923		1924		1925	
	Barrels	Value	Barrels	Value	Barrels	Value
		\$		\$		\$
Made from limestone.....	7,688,196		7,768,652		7,869,946	
<b>Total made.....</b>	<b>7,688,196</b>		<b>7,768,652</b>		<b>7,869,946</b>	
Sold or used.....	7,543,589	15,064,661	7,498,624	13,398,411	8,116,597	14,046,704
Stocks Dec. 31.....	1,251,546		1,521,574		1,274,923	
IMPORTS—						
Portland cement.....	17,697	75,294	27,672	69,320	21,849	63,067
Manufactures.....		86,974		9,772		13,753
EXPORTS.....	493,751	824,811	153,520	213,845	997,915	1,498,495
CONSUMPTION.....	7,067,535		7,372,776		7,140,531	

Table 193.—Sales of Cement in Canada by Provinces, 1924 and 1925

Province	1924		1925	
	Barrels	Value	Barrels	Value
		\$		\$
Quebec.....	2,758,316	4,796,959	3,365,802	5,689,991
Ontario.....	3,564,499	5,668,671	3,462,358	5,253,911
Manitoba.....	286,948	746,750	407,395	1,037,929
Alberta.....	416,534	945,700	395,857	913,529
British Columbia.....	472,327	1,240,331	485,185	1,151,344
<b>Canada.....</b>	<b>7,498,624</b>	<b>13,398,411</b>	<b>8,116,597</b>	<b>14,046,704</b>

## CLAY AND CLAY PRODUCTS

Under "Clay and Clay Products" there have been included statistics relating to production in Canada from domestic clays, of (a) fireclay, (b) fireclay blocks and shapes; (c) fire brick; (d) brick made by the different processes such as the soft mud process, stiff mud process and dry press; (e) structural tile, such as hollow blocks, roofing tile, floor tile (quarries), ceramic or glazed floor and wall tile; (f) drain tile; (g) sewer pipe, including copings, flue linings, etc.; and (h) pottery.

The total value of clay products produced in Canada from domestic raw materials during 1925 was \$9,529,691, an increase of 3.4 per cent over the 1924 total of \$9,215,077. Sales in the province of Ontario reached a value of \$5,195,084 as against \$5,089,299 in the preceding year.

Nova Scotia, Manitoba, Alberta and British Columbia producers all reported increased productions, but there was a slight falling-off in each of the other provinces.

The schedule designed in 1924 as the result of a conference of the Dominion Bureau of Statistics officials and the members of the Canadian National Clay Products Association, has been found very satisfactory both to producers and to the compilers of data for the industry.

Statistics on production in Canada from imported clays are given in table 195.

Table 194.—Production of Clay Products in Canada, from Domestic Clays, by Provinces, 1923, 1924 and 1925

Province	1923		1924		1925	
	Sold or used	Per cent of total value	Sold or used	Per cent of total value	Sold or used	Per cent of total value
	\$		\$		\$	
Prince Edward Island.....			3,340	0.04	3,020	0.03
Nova Scotia.....	413,974	3.95	355,948	3.86	422,690	4.43
New Brunswick.....	62,587	0.60	74,994	0.81	69,473	0.72
Quebec.....	2,439,598	23.28	2,435,695	26.44	2,426,887	25.46
Ontario.....	6,270,615	59.82	5,089,299	55.24	5,195,084	54.51
Manitoba.....	160,134	1.53	117,450	1.27	173,794	1.82
Saskatchewan.....	119,405	1.13	137,280	1.49	95,952	1.06
Alberta.....	590,555	5.63	540,477	5.86	618,860	6.49
British Columbia.....	426,138	4.06	460,594	4.99	523,931	5.48
<b>Canada.....</b>	<b>10,483,016</b>	<b>100.00</b>	<b>9,215,077</b>	<b>100.00</b>	<b>9,529,691</b>	<b>100.00</b>

Table 195.—Value of Clay Products Produced in Canada from Domestic and Imported Clays, 1924 and 1925

Item	From domestic clays		From imported clays		Total	
	1924	1925	1924	1925	1924	1925
	\$	\$	\$	\$	\$	\$
Fireclay blocks and shapes.....	51,273	36,567	146,016	157,911	197,289	194,478
Sanitary ware.....			254,752	240,501	254,752	240,501
Ceramic or glazed floor and wall tile.....		28,338	91,759	110,059	91,759	138,397
Pottery, glazed and unglazed.....	238,342	267,255	53,678	55,305	292,020	322,560
Electrical porcelain insulators.....			1,332,679	973,328	1,332,679	973,328
Other clay products (brick, tile, sewer-pipe, etc.).....	8,925,462	9,197,531	885	204,641	8,926,347	9,402,172
<b>Total.....</b>	<b>9,215,077</b>	<b>9,529,691</b>	<b>1,879,769</b>	<b>1,741,745</b>	<b>11,094,846</b>	<b>11,271,436</b>

Table 196.—Production in Canada, Imports and Exports of Clay and Clay Products, 1923, 1924 and 1925

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>SALES—</b>						
Bricks, common.....	M	250,565	3,884,474			
Bricks, pressed.....	M	73,400	1,461,483			
Bricks, hollow building.....	M	7,720	620,329			
Bricks, moulded and ornamental.....	M	64,682	1,355,360			
Fire brick.....	M	6,122	295,037			
Fire clay.....	Tons	2,685	24,158			
Fire clay blocks and shapes.....			81,345			
Fireproofing and hollow porous blocks.....			379,805			
Kaolin.....	Tons	163	2,369			
Paving brick.....	M					
Pottery from domestic clay.....			229,547			
Sewer pipe.....	Tons	70,252	1,616,324			
Architectural terra-cotta and tile other than drain.....			209,471			
Tile, drain.....	M	10,599	323,314			
<b>Total.....</b>		<b>10,483,016</b>		<b>9,215,077</b>		<b>9,529,691</b>
<b>IMPORTS—</b>						
Bath brick.....				1,799		695
Building brick.....	M	5,381	140,441	5,425	124,983	5,489
Building blocks.....			77,972		63,559	
<b>Clays—</b>						
China.....	Cwt.	342,408	242,860	390,613	250,113	363,890
Fire.....	"	1,070,122	223,628	886,091	180,696	824,774
Pipe.....			1,161		847	
Other clays.....			99,515		56,590	
Drain tile, unglazed.....			2,041		3,014	
Drain and sewer pipe.....			61,868		68,449	
Earthenware and chinaware.....			5,067,489		4,124,607	
Brick, fire, other, valued at not less than \$100 per M. rectangular shaped; the dimensions of each not to exceed 125 cubic inches for use exclusively in the construction or repair of a furnace, kiln, etc.....			970,324		23,413	
Brick, fire, n.o.p., for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment—(From May 12, 1—23.)						
Firebrick, n.o.p.....			610,243		812,039	
Firebrick, chrome—(From May 12, 1923).....			4,000		284,388	
Magnesite brick.....			120,453			
Silica brick.....			216,642		91,553	
Paving brick.....	M	3,243	90,767	2,559	154,251	
Other clay manufactures.....			241,320		69,493	
<b>Total.....</b>		<b>8,172,662</b>		<b>7,158,371</b>		<b>7,478,084</b>
<b>EXPORTS—</b>						
Building brick.....	M	4,069	42,742	2,988	38,105	1,758
<b>Clay—</b>						
Unmanufactured.....	Cwt.	12	52	1,346	1,127	7,325
Manufactures.....			109,957		109,295	
Earthenware.....			432,092		72,839	
Porcelain insulators*.....					322,206	
<b>Total.....</b>		<b>584,843</b>		<b>543,572</b>		<b>220,818</b>

\*Prior to April 1924, porcelain insulators included with earthenware.

Table 197.—Production of Clay Products in Canada, from Domestic Clays, 1924 and 1925

Kind	1924		1925	
	Quantity	Total selling value	Quantity	Total selling value
Brick: Soft mud process {Face..... M	10,831	\$ 185,248	27,701	\$ 521,739
{Common..... "	50,079	746,044	51,214	753,970
Stiff mud process {Face..... M	80,565	1,842,224	93,903	1,883,856
{Common..... "	124,556	1,880,631	116,105	1,635,257
Dry press {Face..... "	35,203	761,572	37,201	800,504
{Common..... "	12,794	168,042	22,055	270,135
Fancy or ornamental brick (including special shapes, embossed and enamelled brick)..... "	755	98,460	524	26,320
Sewer brick..... "	2,690	40,775	2,485	52,382
Firebrick from domestic clay..... "	4,327	209,256	6,197	305,332
Fireclay..... Ton	3,645	26,258	623	6,544
Fireclay blocks and shapes..... "		51,273		36,567
Structural tile: Hollow blocks (including fireproofing and load-bearing tile)..... Ton	96,818	926,777	115,576	1,093,397
Roofing tile..... No.	7,377	917	78,479	6,323
Floor tile (quarries)..... Sq. ft	444,601	35,608	140,927	28,338
Drain tile..... M	15,137	499,369	14,552	401,503
Sewer pipe (including copings, flue linings, etc.)..... Ton	76,355	1,594,280	73,791	1,440,269
Pottery, glazed or unglazed..... "		238,342		267,255
Total.....		9,215,077		9,529,691

**Brick.**—The total Canadian production in 1925 was valued at \$5,944,163 as compared with a value of \$5,722,997 in 1924. Ontario leads all other provinces in Canada in the production of building brick. In 1925, this province's production had a selling value of \$3,196,335; Quebec followed with a total value of \$2,018,008; and Alberta came next with a valuation of \$224,569. British Columbia, Manitoba, Nova Scotia, Saskatchewan, New Brunswick and Prince Edward Island followed in the order named.

Table 198.—Production of Building Brick in Canada by Provinces, 1924 and 1925

		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	*Canada
<b>1924</b>										
Soft mud process	Face..... M				10,605		226			10,831
	Common..... M	440	2,345	4,802	182,385		2,863			185,248
Stiff mud process (wire cut)	Face..... M	5,880	38,131	48,865	483,742	93,698	20,473	19,105	2,565	50,079
	Common..... M	675		14,611	63,353	165	1,200	213	29,470	746,044
Dry press	Face..... M	13,581		381,549	1,385,131	4,911	3,210	5,736	348	80,565
	Common..... M	4,161		93,343	22,563	127	227	3,502	19,106	1,842,224
Fancy or ornamental brick	Face..... M	50,322		1,351,657	424,536	1,270	3,570	38,823	10,453	1,880,631
	Common..... M			1,817	30,597		173	1,486	1,130	35,203
Sewer brick	Face..... M			53,006	636,101		6,064	25,824	40,577	761,572
	Common..... M			2,433	34,093		128	7,510	2,723	12,794
Total	Face..... M						2,018	96,533	35,399	168,043
	Common..... M			223	532					755
Total	Face..... M			9,603	88,857					98,460
	Common..... M			2,656	39,446				34	2,690
Total	Face..... M								1,329	40,775
	Common..... M									
<b>Total</b> .....	M	<b>5,276</b>	<b>2,345</b>	<b>114,796</b>	<b>163,780</b>	<b>6,014</b>	<b>3,557</b>	<b>14,157</b>	<b>7,433</b>	<b>317,473</b>
	\$	<b>69,783</b>	<b>38,131</b>	<b>1,844,680</b>	<b>3,279,291</b>	<b>99,879</b>	<b>67,198</b>	<b>186,111</b>	<b>136,334</b>	<b>5,722,997</b>
<b>1925</b>										
Soft mud process	Face..... M			3	24,479	3,219				27,701
	Common..... M	830	2,000	7,740	30,799	45,066	662		3,169	521,739
Stiff mud process (wire cut)	Face..... M	10,760	30,000	80,114	474,114	96,632	9,951		52,399	51,214
	Common..... M	1,435		21,224	68,975	324	560	852	533	753,970
Dry press	Face..... M	29,180		595,113	1,288,382	8,404	17,104	17,963	16,710	1,883,856
	Common..... M	3,658		93,827	12,642	29	465	5,036	268	93,903
Fancy or ornamental brick	Face..... M	45,475		1,328,403	195,202	283	6,531	52,645	4,198	1,635,257
	Common..... M			2,919	32,016		77	922	1,267	37,201
Sewer brick	Face..... M			91,551	638,812		2,634	16,525	50,982	800,504
	Common..... M			250	4,587			11,930	4,486	22,055
Total	Face..... M		2,800	7,200	64,377			137,436	58,322	270,135
	Common..... M				98					524
Total	Face..... M			4,592	21,728					26,320
	Common..... M			2,125	37,082				360	2,485
Total	Face..... M								15,300	52,382
	Common..... M									
<b>Total</b> .....	M	<b>5,923</b>	<b>2,250</b>	<b>126,611</b>	<b>176,049</b>	<b>9,586</b>	<b>1,764</b>	<b>18,740</b>	<b>10,083</b>	<b>351,186</b>
	\$	<b>83,415</b>	<b>32,800</b>	<b>2,018,008</b>	<b>3,196,335</b>	<b>150,385</b>	<b>36,220</b>	<b>224,569</b>	<b>197,911</b>	<b>5,944,163</b>

\*Totals for Canada include record of small production in Prince Edward Island.

Table 199.—Production of Building Brick (Common and Pressed), 1886-1906

Year	Value	Year	Value	Year	Quantity	Value
	\$		\$		M	\$
1886.....	873,600	1893.....	1,800,000	1900.....		2,275,000
1887.....	986,689	1894.....	1,800,000	1901.....		2,400,000
1888.....	1,036,746	1895.....	1,670,000	1902.....		2,593,000
1889.....	1,273,884	1896.....	1,600,000	1903.....		2,832,000
1890.....	1,266,982	1897.....	1,600,000	1904.....		2,983,000
1891.....	1,061,536	1898.....	1,900,000	1905.....	523,820	3,933,925
1892.....	1,251,934	1899.....	2,195,000	1906.....	523,390	4,102,590
				<b>Total.....</b>		<b>41,435,886</b>

Table 200.—Production of Common Brick, 1907-1923

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$		M	\$
1907.....	439,016	3,455,524	1914.....	457,514	3,653,861	1920.....	303,343	4,835,996
1908.....	353,261	2,611,551	1915.....	234,733	1,755,187	1921.....	220,438	3,567,503
1909.....	539,229	4,212,424	1916.....	237,035	1,826,844	1922.....	294,919	4,714,658
1910.....	627,715	5,105,354	1917.....	210,631	1,999,465	1923.....	250,565	3,884,474
1911.....	645,551	5,420,890	1918.....	164,970	1,879,811			
1912.....	769,192	7,010,375	1919.....	291,470	3,850,219	<b>Total.....</b>	<b>6,708,009</b>	<b>65,701,512</b>
1913.....	668,427	5,917,373						

Table 201.—Production of Pressed Brick, 1907-1923

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$		M	\$
1907.....	78,922	794,722	1914.....	93,635	1,115,556	1920.....	85,137	2,004,537
1908.....	53,481	517,180	1915.....	49,817	492,774	1921.....	80,947	1,738,293
1909.....	57,265	630,677	1916.....	44,947	492,355	1922.....	90,578	1,839,549
1910.....	67,895	807,294	1917.....	46,409	653,153	1923.....	73,400	1,461,483
1911.....	87,351	1,094,582	1918.....	40,147	639,083			
1912.....	125,180	1,609,854	1919.....	74,424	1,304,162	<b>Total.....</b>	<b>1,266,337</b>	<b>18,653,987</b>
1913.....	116,802	1,458,733						

Table 202.—Production of Paving Brick\*, 1897-1925

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$		M	\$
1897.....	4,568	45,670	1905.....	4,500	54,000	1914.....	2,707	49,627
1898.....			1906.....	3,000	45,000	1915.....	1,228	20,694
1899.....	5,300	42,550	1907.....	3,618	72,354	1916.....	1,590	30,144
1900.....	2,710	26,950	1908.....	3,720	59,456	1917-1921.....		
1901.....	3,689	37,000	1909.....	3,760	67,408	1922.....	151	5,972
1902.....	4,211	42,000	1910.....	4,215	78,980	1923-1925.....		
1903.....	3,789	45,288	1911.....	5,220	79,444			
1904.....	4,436	55,450	1912.....	4,530	85,989	<b>Total.....</b>	<b>71,200</b>	<b>1,019,645</b>
			1913.....	4,208	75,669			

\*Figures prior to 1907 compiled by the Ontario Bureau of Mines.

**Structural Tile.**—Records of the production of structural tile in Canada include such items as hollow blocks (fire-proofing and load-bearing tile), roofing tile, and floor tile; sales of these products amounted in value to \$1,128,058 in 1925 as compared with \$963,302 in 1924. Hollow blocks were manufactured in every province except New Brunswick and Prince Edward Island. Roofing and floor tile were made in Ontario during 1925. In the preceding year a small quantity of floor tile was produced in British Columbia.

Table 203.—Production of Hollow Building Blocks, Fireproofing, Architectural Terra-cotta and Tile other than Drain, in Canada, by Provinces, 1923

Province	Hollow building bricks or blocks		Fireproofing and hollow porous blocks	Architectural terra-cotta and tile other than drain
	1923		1923	1923
	Quantity	Value	Value	Value
	M	\$	\$	\$
Nova Scotia .....	294	26,074		
Quebec .....	1,929	156,112	66,868	28,082
Ontario .....	4,163	309,605	284,039	181,376
Manitoba .....	137	15,478		
Saskatchewan .....	215	19,650		
Alberta .....	400	41,657	28,898	
British Columbia .....	577	51,753		13
Canada .....	7,720	620,329	379,805	209,471

Table 204.—Production of Structural Tile in Canada by Provinces, 1924 and 1925

Province	Hollow blocks (including fireproofing and load-bearing tile)		Roofing tile		Floor tile (quarries)	
	Tons	Value	No.	Value	Sq. ft.	Value
1924		\$		\$		\$
Nova Scotia .....	4,695	54,410				
Quebec .....	29,366	277,940				
Ontario .....	48,134	428,894	7,377	917	441,301	35,211
Manitoba .....	969	11,726				
Saskatchewan .....	1,795	35,892				
Alberta .....	5,511	51,518				
British Columbia .....	6,348	66,397			3,300	397
Canada .....	96,818	926,777	7,377	917	444,601	35,608
1925						
Nova Scotia .....	6,706	67,863				
Quebec .....	31,842	302,272				
Ontario .....	62,926	577,477	78,479	6,323	140,927	28,338
Manitoba .....	610	9,329				
Saskatchewan .....	2,700	27,052				
Alberta .....	5,166	49,831				
British Columbia .....	5,626	59,573				
Canada .....	115,576	1,093,397	78,479	6,323	140,927	28,338

**Drain Tile and Sewer Pipe.**—The Canadian production of sewer pipe during 1925 totalled 73,791 tons valued at \$1,440,269 as compared with 76,355 tons worth \$1,594,280 produced in 1924. Sales of drain tile, during the period under review were recorded at 14,552 thousand valued at \$401,503 as against a total of 15,137 thousand at \$409,369 sold in 1924. Ontario accounted for 92.8 per cent of the total production of drain tile and 66 per cent of the sewer pipe produced.

Table 205.—Production of Sewer Pipe in Canada, 1888-1925

Year	Value	Year	Value	Year	Tons	Value
	\$		\$			\$
1888 .....	266,320	1901 .....	248,115	1914 .....		1,104,499
1889 .....	*	1902 .....	301,965	1915 .....		799,446
1890 .....	348,000	1903 .....	317,970	1916 .....		716,287
1891 .....	227,300	1904 .....	440,894	1917 .....		783,762
1892 .....	367,660	1905 .....	382,000	1918 .....	36,574	699,774
1893 .....	350,000	1906 .....	530,045	1919 .....	62,821	1,074,146
1894 .....	250,325	1907 .....	667,100	1920 .....	58,887	1,549,090
1895 .....	257,045	1908 .....	514,362	1921 .....		1,666,584
1896 .....	153,875	1909 .....	645,722	1922 .....	75,932	1,766,347
1897 .....	164,250	1910 .....	774,110	1923 .....	70,252	1,616,324
1898 .....	181,717	1911 .....	812,716	1924 .....	76,355	1,594,280
1899 .....	161,546	1912 .....	884,641	1925 .....	73,791	1,440,269
1900 .....	231,525	1913 .....	1,035,906			
				Total .....		25,325,917

\*Data not available.

Table 206.—Production of Drain Tile in Canada, 1891-1925

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
*1891.....	90,000	1900.....	225,000	1909.....	408,440	1918.....	499,340
1892.....	100,000	1901.....	250,000	1910.....	370,008	1919.....	616,510
1893.....	190,000	1902.....	250,000	1911.....	339,812	1920.....	562,652
*1894.....	280,000	1903.....	275,000	1912.....	357,862	1921.....	473,952
1895.....	210,000	1904.....	260,000	1913.....	338,552	1922.....	407,386
1896.....	225,000	1905.....	260,000	1914.....	366,340	1923.....	323,314
1897.....	225,000	1906.....	290,000	1915.....	355,296	1924.....	409,369
1898.....	225,000	1907.....	260,609	1916.....	359,387	1925.....	401,503
1899.....	225,000	1908.....	298,561	1917.....	434,708		
						<b>Total.....</b>	<b>11,163,601</b>

\*1891-1894 (inclusive), as reported by Ontario Bureau of Mines.

Table 207.—Production of Drain Tile and Sewer Pipe, in Canada, by Provinces, 1924 and 1925

Province	1924				1925			
	Drain tile		Sewer pipe		Drain tile		Sewer pipe	
	M	\$	Tons	\$	M	\$	Tons	\$
Prince Edward Island.....	76	1,750			22	500		
Nova Scotia.....	71	2,515	12,910	214,783	44	1,520	11,483	105,787
Quebec.....	65	2,550	12,939	310,525	50	1,906	4,251	104,701
Ontario.....	14,096	373,979	42,449	848,398	13,496	360,710	49,334	893,442
Manitoba.....	167	5,845			278	14,080		
Saskatchewan.....	200	8,000			20	1,000		
Alberta.....	38	1,831	6,345	168,016	84	3,373	6,985	191,257
British Columbia.....	424	12,899	1,712	52,558	558	18,414	1,738	55,082
<b>Canada.....</b>	<b>15,137</b>	<b>409,369</b>	<b>76,355</b>	<b>1,594,280</b>	<b>14,552</b>	<b>401,503</b>	<b>73,791</b>	<b>1,440,269</b>

**Sanitary Ware and Pottery from Domestic Clays.**—Pottery from domestic clays sold during 1925 amounted in value to \$267,255 as against \$238,342 in the preceding year. Pottery produced from imported clays in 1925 was valued at \$55,305; thus the total production of this commodity was worth \$322,560. While no sanitary ware was produced in Canada from domestic clays during 1925, the production of this commodity from imported clays was valued at \$240,501.

In computing the value of the mineral production of Canada, only the sales of pottery made from domestic clays are included; the value of pottery made from imported clays is included in the record of manufactures, on which a special Bureau report is issued.

Table 208.—Production of Pottery from Domestic Clays in Canada, 1888-1925

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
1888.....	27,750	1898.....	214,675	1908.....	200,541	1918.....	130,242
1889.....	*	1899.....	185,000	1909.....	285,285	1919.....	185,474
1890.....	195,242	1900.....	200,000	1910.....	250,924	1920.....	209,171
1891.....	258,844	1901.....	200,000	1911.....	102,493	1921.....	231,262
1892.....	265,811	1902.....	200,000	1912.....	43,955	1922.....	266,391
1893.....	213,186	1903.....	200,000	1913.....	53,533	1923.....	229,547
1894.....	162,144	1904.....	140,000	1914.....	35,371	1924.....	238,342
1895.....	151,588	1905.....	120,000	1915.....	64,900	1925.....	267,255
1896.....	163,427	1906.....	150,000	1916.....	61,069		
1897.....	129,629	1907.....	253,809	1917.....	122,878	<b>Total.....</b>	<b>6,499,738</b>

\*Not available.

**Kaolin.**—There were no shipments of kaolin in Canada during 1925. In 1923, some 163 tons of this commodity were shipped from the St. Rémi d'Amherst deposit in Quebec. During the year under review, considerable development work was done on the china clay deposits on the Mattagami river, near Long Falls, Temiskaming district, Ontario.

Table 209.—Production of Kaolin in Canada, 1912-1925

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1912.....	20	160	1917.....	533	9,594	1922.....	1,197	17,866
1913.....	500	5,000	1918.....	863	19,299	1923.....	163	2,369
1914.....	1,000	10,000	1919.....	759	13,744	1924-25.....		
1915.....	1,300	13,000	1920.....	683	15,022			
1916.....	1,750	17,500	1921.....	124	1,888	<b>Total.....</b>	<b>8,892</b>	<b>125,442</b>

**Refractories.**—*Fireclay.*—Sales of fire clay or refractory clay sold as such, in Canada, during 1925 amounted to 623 tons valued at \$6,544. Shipments of this commodity were made from deposits in the provinces of British Columbia, Saskatchewan, New Brunswick and Nova Scotia.

*Firebrick.*—Firebrick produced from domestic clays totalled 6,197 thousand valued at \$305,332, as against 4,327 thousand valued at \$209,256 in the previous year. British Columbia was the principal producer accounting for 57 per cent of the total sales of this commodity in the whole of Canada.

Imports of firebrick into Canada during 1925 consisting of magnesite brick, silica brick, chrome brick, firebrick of a kind not made in Canada, and firebrick n.o.p., were appraised at \$1,397,342.

Large deposits of magnesite from which a good grade of basic high temperature brick may be made, occur in the province of Quebec.

Table 210.—Production of Fire Clay in Canada, 1889-1925

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	Tons	\$		Tons	\$		Tons	\$
1889.....	400	4,800	1902.....	2,741	4,283	1915.....	2,328	12,065
1890.....			1903.....	2,639	3,523	1916.....	9,206	30,767
1891.....	250	750	1904.....	5,972	17,466	1917.....	10,534	49,455
1892.....	1,991	4,467	1905.....	5,088	13,917	1918.....	8,732	44,351
1893.....	540	700	1906.....	6,559	18,522	1919.....	4,600	24,163
1894.....	539	2,167	1907.....			1920.....	8,321	44,091
1895.....	1,329	3,492	1908.....	1,984	8,121	1921.....	2,931	29,851
1896.....	842	1,805	1909.....	4,405	12,390	1922.....	10,196	55,185
1897.....	2,118	5,759	1910.....	1,425	5,863	1923.....	2,685	24,158
1898.....	670	1,680	1911.....	7,532	24,128	1924.....	3,645	26,258
1899.....	599	1,295	1912.....	6,307	24,343	1925.....	623	6,544
1900.....	1,245	4,130	1913.....	3,345	14,018			
1901.....	3,979	5,920	1914.....	2,171	12,875	<b>Total.....</b>	<b>128,471</b>	<b>543,302</b>

Table 211.—Production of Fire Brick and Other Fire-Clay Products in Canada, from Domestic Clays, 1907-1925

Year	Fire brick		Other fireclay products	Year	Fire brick		Other fireclay products
	Quantity	Value	Value		Quantity	Value	Value
	M	\$	\$		M	\$	\$
1907.....	4,323	113,322	18,000	1917.....	8,192	199,171	77,885
1908.....	2,416	70,429	31,752	1918.....	7,192	248,884	111,589
1909.....	1,059	32,742	33,000	1919.....	5,610	268,756	96,435
1910.....	1,375	29,352	15,000	1920.....	7,293	375,230	54,792
1911.....	2,368	44,122	20,880	1921.....	4,502	242,462	91,685
1912.....	3,430	67,192	34,050	1922.....	6,705	251,776	67,588
1913.....	3,667	86,164	42,556	1923.....	6,122	295,037	81,345
1914.....	2,816	72,299	22,394	1924.....	4,327	209,256	51,273
1915.....	2,896	68,700	29,928	1925.....	6,197	305,332	36,567
1916.....	5,689	147,757	56,038	<b>Total.....</b>	<b>86,179</b>	<b>3,127,983</b>	<b>972,757</b>

Table 212.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1924

Province	Fire clay		Fire brick		Fire clay blocks and shapes
	Sold or used		Sold or used		
	Quantity	Value	Quantity	Value	Sold or used
	Tons	\$	M	\$	\$
Nova Scotia.....	1,967	5,258	176	8,269	930
New Brunswick.....	50	2,005	23	640	.....
Ontario.....	.....	.....	718	38,509	.....
Saskatchewan.....	315	2,436	436	19,936	3,818
Alberta.....	.....	.....	.....	.....	12,977
British Columbia.....	1,313	16,559	2,974	141,902	33,548
Canada.....	3,645	26,258	4,327	209,256	51,273

Table 213.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1925

Province	Fire clay		Fire brick		Fire clay blocks and shapes
	Sold or used		Sold or used		Sold or used
	Quantity	Value	Quantity	Value	
	Tons	\$	M	\$	
Nova Scotia.....	48	489	1,221	71,336	280
New Brunswick.....	49	1,956	30	768	
Ontario.....			904	46,459	
Saskatchewan.....	319	2,895	447	21,672	7,113
Alberta.....			58	2,524	
British Columbia.....	207	1,204	3,537	162,573	29,174
Canada.....	623	6,544	6,197	305,332	36,567

## LIME

Production of lime in Canada during 1925, increased 12 per cent in quantity over the previous year's shipments. The year's production amounted to 10,256,542 bushels, consisting of 8,529,399 bushels of quicklime, and 60,450 tons of hydrated lime, having a total value of \$3,387,652. In 1924, the total production was 9,136,952 bushels valued at \$3,178,541. The average price throughout Canada for quicklime in 1925 was 32 cents per bushel, while hydrated lime sold for \$11.30 per ton.

Importations of lime in the year under review were recorded at 4,700 tons appraised at \$47,639. Exports, according to Customs' records, were 16,286 tons, worth \$312,168.

Quicklime is used extensively in Canada in chemical works, pulp and paper mills and in the building trades. Hydrated lime is sold mainly to the building trades and dealers, although appreciable quantities are also consumed in the chemical industry, pulp and paper mills, etc.

Ontario is the chief Canadian source of lime; this province produced 5,115,974 bushels of quicklime and 41,610 tons of hydrated lime in 1925 having a total selling value at the kiln of \$2,044,125. There was no production of lime in Prince Edward Island nor Saskatchewan during 1925.

Table 214.—Production of Lime in Canada, 1886-1925

Year	Value	Year	Bushels	Value	Year	Bushels	Value
	\$			\$			\$
1886.....	282,755	1900 (Estimated).....	.....	800,000	1914.....	7,028,582	1,360,628
1887.....	394,859	1901.....	.....	830,000	1915.....	5,047,244	1,015,702
1888.....	339,951	1902.....	.....	892,000	1916.....	5,493,250	1,091,463
1889.....	362,848	1903.....	.....	900,000	1917.....	6,567,170	1,558,487
1890.....	412,308	1904.....	.....	780,000	1918.....	6,363,951	1,876,025
1891.....	251,215	1905.....	.....	750,000	1919.....	7,147,504	2,310,607
1892.....	411,270	1906.....	5,230,406	1,009,177	1920.....	9,427,334	3,818,553
1893 (Estimated).....	900,000	1907.....	4,755,316	974,595	1921.....	6,879,066	2,781,197
1894.....	900,000	1908.....	3,601,468	712,947	1922.....	8,972,971	3,165,005
1895.....	700,000	1909.....	5,592,924	1,132,756	1923.....	10,035,319	3,266,608
1896.....	650,000	1910.....	5,848,146	1,137,079	1924.....	9,136,952	3,178,541
1897.....	650,000	1911.....	7,533,525	1,517,599	1925.....	10,256,542	3,387,652
1898 (Estimated).....	650,000	1912.....	8,475,839	1,844,849			
1899.....	800,000	1913.....	7,558,484	1,609,398	<b>Total.....</b>		<b>51,407,074</b>

**Table 215.—Production of Lime in Canada, 1924 and 1925, showing Purposes for which Sold or Used**

Purpose for which sold or used	1924				1925			
	Quicklime		Hydrated lime		Quicklime		Hydrated lime	
	Bushels	Value*	Tons	Value*	Bushels	Value*	Tons	Value*
		\$		\$		\$		\$
Building trades.....	1,056,281	430,624	22,772	284,327	1,003,084	369,574	29,658	358,178
Chemical works.....	2,653,362	843,111	1,953	13,835	3,145,399	992,360	2,325	18,576
Glass works.....	94,602	26,567	25	287	78,653	21,706		
Smelters.....	56,518	35,689			181,749	58,404		
Pulp and paper mills.....	1,896,907	466,189	3,535	33,915	2,028,002	479,025	5,569	37,562
Sugar refineries.....	315,323	94,383			314,786	94,974		
Tanneries.....	63,141	21,411	111	1,166	98,414	30,142	177	1,272
Agricultural uses (fertilizers).....			399	3,374	13,667	2,784	611	5,119
Dealers (uses unspecified).....	743,816	287,362	13,073	160,937	868,658	278,760	16,992	198,430
Other consumers.....	940,259	424,002	4,218	51,362	796,987	377,036	5,118	63,750
<b>Total sold or used.....</b>	<b>7,820,209</b>	<b>2,629,338</b>	<b>46,086</b>	<b>549,203</b>	<b>8,529,399</b>	<b>2,704,765</b>	<b>60,450</b>	<b>682,886</b>

\*Total selling value at kiln.

**Table 216.—Production of Lime in Canada, by Provinces, 1923, 1924 and 1925**

Province	Quicklime		Hydrated lime		Total	
	Sold or used		Sold or used		Sold or used	
	Bushels	Selling value at kiln	Bushels	Selling value at kiln	Bushels	Selling value at kiln
		\$		\$		\$
Nova Scotia.....	1923 42,370	7,199			42,370	7,199
	1924 .....		2,229	936	2,229	937
	1925 57	20	8,200	3,444	8,257	3,464
New Brunswick.....	1923 329,548	143,814			329,548	143,814
	1924 208,180	108,890			208,180	108,890
	1925 202,106	92,216			202,106	92,216
Quebec.....	1923 2,198,071	576,731	159,857	57,482	2,357,928	634,213
	1924 2,219,359	640,990	167,086	58,947	2,386,445	699,937
	1925 2,272,751	601,031	269,486	72,249	2,542,237	673,330
Ontario.....	1923 4,810,421	1,373,823	1,192,200	519,840	6,002,621	1,893,663
	1924 4,391,050	1,401,545	1,028,257	438,607	5,419,307	1,840,152
	1925 5,115,974	1,566,540	1,188,857	477,585	6,304,831	2,044,125
Manitoba.....	1923 524,128	161,226			524,128	161,226
	1924 394,229	121,518			394,229	121,518
	1925 324,515	100,833	125,800	69,397	450,315	170,230
Alberta.....	1923 86,810	37,653	943	346	87,753	37,999
	1924 89,814	36,083	400	196	90,214	36,279
	1925 98,938	39,852			98,938	39,852
British Columbia.....	1923 564,971	338,443	126,000	50,051	690,971	388,494
	1924 517,577	320,312	118,771	50,517	636,348	370,829
	1925 515,058	304,223	134,800	60,212	649,858	364,435
<b>Canada.....</b>	<b>1923 8,556,319</b>	<b>2,638,889</b>	<b>1,479,000</b>	<b>627,719</b>	<b>10,035,319</b>	<b>3,266,608</b>
	<b>1924 7,820,209</b>	<b>2,629,338</b>	<b>1,316,743</b>	<b>549,203</b>	<b>9,136,952</b>	<b>3,178,541</b>
	<b>1925 8,529,399</b>	<b>2,704,765</b>	<b>1,727,143</b>	<b>682,887</b>	<b>10,256,542</b>	<b>3,887,652</b>

**Table 217.—Imports into Canada and Exports of Lime, 1923, 1924 and 1925**

Item	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Imports.....	4,989	55,820	4,418	46,578	4,700	47,639
Exports.....	24,326	428,286	22,750	411,122	16,286	312,168

**SAND AND GRAVEL**

The production of sand and gravel in 1925 totalled 11,018,647 tons valued at \$3,220,410 as against 11,603,500 tons valued at \$3,181,083 in 1924. This represented a decrease in quantity of 5 per cent and in value an increase of 1.2 per cent.

Imports of sand and gravel into Canada during the year were as follows: sand and gravel n.o.p., 282,203 tons, appraised at \$184,400; silica sand for the manufacture of glass and carborundum and for the use in foundries, 143,502 tons at \$353,237.

**Production by Railway Companies.**—As the sand and gravel produced by railway companies in Canada accounted for 38.2 per cent of the total production, statistics relating to this output have been tabulated separately from data regarding other producers. It will be noted in the table below that 89 per cent of this output was utilized as railway ballast. In addition to this quantity there was a production of 416,049 tons for use in concrete work; and smaller quantities for use as blast, core and engine sands.

**Production by Other Operators.**—Statistics given under this sub-heading include data concerning the production of sand and gravel by all operators in Canada other than railway companies. These producers numbered 435 operators distributed as follows: Nova Scotia, 9; New Brunswick, 3; Quebec, 65; Ontario, 336; Manitoba, 10; Saskatchewan, 5; Alberta, 3; and 4 in British Columbia.

Table 218.—Production of Sand and Gravel in Canada, 1895-1925\*

Year	Quantity		Value	Year	Quantity		Value	Year	Quantity		Value
	Tons	\$			Tons	\$			Tons	\$	
1895.....	277,162	118,359		1906.....	336,550	139,712		1917.....	9,182,417	2,326,249	
1896.....	224,769	80,110		1907.....	293,095	119,853		1918.....	11,262,282	2,367,018	
1897.....	152,963	76,729		1908.....	293,954	161,387		1919.....	10,364,481	2,680,460	
1898.....	165,954	90,498		1909.....	481,534	255,166		1920.....	11,530,795	4,201,067	
1899.....	242,450	101,640		1910.....	624,824	407,974		1921.....	11,574,862	2,537,249	
1900.....	197,558	101,666		1911.....	573,494	408,110		1922.....	11,666,374	3,502,935	
1901.....	197,302	117,465		1912.....		1,512,099		1923.....	12,752,515	3,016,518	
1902.....	159,793	119,120		1913.....		2,253,874		1924.....	11,603,500	3,181,083	
1903.....	355,792	124,006		1914.....		2,505,310		1925.....	11,018,647	3,220,410	
1904.....	399,809	189,803		1915.....		1,624,767					
1905.....	306,935	152,805		1916.....	8,155,207	1,838,320		<b>Total.....</b>		<b>39,537,762</b>	

\*Exports prior to 1912. No production statistics collected.

Table 219.—Production in Canada, Imports and Exports of Sand and Gravel, 1923, 1924 and 1925

Kind	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Moulding sand.....	154,711	111,537	118,202	80,072	57,656	48,880
Building sand and sand for concrete road-work, etc.....	1,740,573	706,250	2,662,809	911,173	2,557,623	755,289
Other sand (including blast, core and engine sands).....	101,695	72,980	46,515	22,346	47,538	17,770
Sand and gravel for railway ballast.....	6,149,789	800,496	5,076,511	696,966	3,950,328	570,235
Sand and gravel for concrete, road building, etc.....	4,115,260	1,050,504	3,086,663	1,203,259	3,955,166	1,626,834
Crushed gravel.....	490,487	274,751	612,800	267,267	450,336	201,402
<b>Total.....</b>	<b>12,752,515</b>	<b>3,016,518</b>	<b>11,603,500</b>	<b>3,181,083</b>	<b>11,018,647</b>	<b>3,220,410</b>
<b>IMPORTS—</b>						
Sand, silica, for glass and carborundum manufacture, etc.....	167,556	317,250	131,778	324,279	143,501	353,237
Sand and gravel, n.o.p.....	355,126	247,388	150,868	118,397	282,203	184,000
<b>Total.....</b>	<b>522,682</b>	<b>564,638</b>	<b>282,646</b>	<b>442,676</b>	<b>425,704</b>	<b>537,237</b>
<b>EXPORTS.....</b>	<b>764,521</b>	<b>182,750</b>	<b>1,036,029</b>	<b>210,496</b>	<b>864,672</b>	<b>198,48</b>

Table 220.—Railway Production of Sand and Gravel in Canada, 1923, 1924 and 1925

Kind	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Moulding sand.....	2,738	405	4,779	708	526	780
Building sand and sand for concrete road-work.....	5,524	2,670	23,121	7,317	26,769	10,816
Other sand (including blast, core and engine sand).....	30,967	38,516	35,703	11,961	38,095	8,927
Sand and gravel for ballast.....	5,991,863	737,812	5,063,711	679,297	3,755,028	500,958
Sand and gravel for concrete, road-building, etc.....	1,409,304	148,535	188,740	39,886	389,280	95,294
Crushed gravel.....	270	500			1,215	1,665
<b>Total.....</b>	<b>7,440,666</b>	<b>928,438</b>	<b>5,316,054</b>	<b>739,169</b>	<b>4,210,913</b>	<b>618,440</b>

Table 221.—Production of Sand and Gravel by Other Operators in Canada, 1923, 1924 and 1925

Kind	1923		1924		1925	
	Tons	Value \$	Tons	Value \$	Tons	Value \$
Moulding sand.....	151,973	111,132	113,423	79,364	57,130	48,100
Building sand and sand for concrete road-work, etc.....	1,735,049	703,580	2,639,688	903,856	2,530,854	744,473
Other sand (including blast, core and engine sands).....	70,728	34,464	10,812	10,385	9,443	8,843
Sand and gravel for railway ballast.....	157,926	62,684	12,800	17,669	195,300	69,277
Sand and gravel for concrete, road building, etc.....	2,705,956	901,969	2,897,923	1,163,373	3,565,886	1,531,540
Crushed gravel.....	490,217	274,251	612,800	267,267	449,121	199,737
<b>Total.....</b>	<b>5,311,849</b>	<b>2,088,080</b>	<b>6,287,446</b>	<b>2,441,914</b>	<b>6,807,734</b>	<b>2,601,970</b>

Table 222.—Production of Sand and Gravel in Canada, by Provinces, 1924

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
Moulding sand..... Tons			3,361	114,099	742				118,202
\$			953	78,293	826				80,072
Building sand, etc..... Tons	4,225		1,057,864	1,149,788	45,259	4,205	22,216	379,252	2,662,809
\$	2,779		214,733	495,208	21,428	1,592	8,828	166,605	911,173
Other sand..... Tons	4,596	1,137	16,121	8,802	607		8,761	6,491	46,515
\$	4,136	352	2,389	8,138	600		4,475	2,256	22,346
Sand and gravel— (a) for railway ballast.. Tons	233,649	113,612	642,197	2,135,002	223,648	676,897	535,120	504,896	*5,076,511
\$	32,663	17,692	51,733	371,251	24,662	88,558	54,924	54,235	* 696,966
(b) for concrete, etc.... Tons	52,913	27,148	472,418	2,219,063	89,279	21,611	9,897	194,334	3,086,663
\$	20,023	5,955	136,754	890,737	34,381	6,895	4,579	103,935	1,203,259
Crushed gravel..... Tons			5,184	547,530			39,600	20,486	612,500
\$			7,866	198,332			43,163	17,906	267,267
<b>Total..... Tons</b>	<b>295,383</b>	<b>141,897</b>	<b>2,197,145</b>	<b>6,174,284</b>	<b>359,535</b>	<b>702,713</b>	<b>615,594</b>	<b>1,105,459</b>	<b>*11,603,500</b>
\$	<b>59,601</b>	<b>23,999</b>	<b>414,428</b>	<b>2,041,959</b>	<b>81,897</b>	<b>97,045</b>	<b>115,969</b>	<b>344,937</b>	<b>*3,181,083</b>

\*Includes 11,490 tons valued at \$1,248 used in Prince Edward Island.

Table 223.—Production of Sand and Gravel in Canada, by Provinces, 1925

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
Moulding sand..... Tons			6	57,076	574				57,656
\$			24	48,263	593				48,880
Building sand..... Tons	4,787	40	1,038,619	1,355,834	34,717	216	26,139	47,271	2,557,623
\$	3,758	13	254,668	464,834	16,865	26	5,488	10,088	755,289
Other sand..... Tons	3,357	1,049	8,593	14,016	317	12,220	7,567	419	47,538
\$	2,783	334	1,931	7,937	249	3,139	1,165	232	17,770
Sand and gravel— (a) for railway ballast. Tons	*231,206	48,172	646,148	905,171	359,235	514,797	328,862	916,737	3,959,328
\$	*31,818	8,018	101,336	85,804	40,710	68,718	42,326	191,505	570,235
(b) for concrete, etc.... Tons	45,949	20,895	459,830	2,440,932	332,309	52,668	171,601	430,982	3,955,166
\$	15,338	3,966	175,891	992,143	138,184	16,922	57,245	227,145	1,626,834
Crushed gravel..... Tons	1,215			428,575			723	19,823	450,336
\$	1,665			180,599			1,212	17,925	201,402
<b>Total..... Tons</b>	<b>*286,514</b>	<b>70,156</b>	<b>2,203,196</b>	<b>5,201,604</b>	<b>727,152</b>	<b>579,901</b>	<b>534,892</b>	<b>1,415,232</b>	<b>11,018,647</b>
\$	<b>55,362</b>	<b>12,331</b>	<b>533,850</b>	<b>1,779,129</b>	<b>196,601</b>	<b>88,805</b>	<b>107,436</b>	<b>446,896</b>	<b>3,220,410</b>

\* Includes 35,430 tons valued at \$5,475 used in Prince Edward Island.

## SAND-LIME BRICK

The total production of sand-lime brick in Canada in 1925 amounted to 63,869 thousand valued at \$781,555, as against 55,873 thousand at \$619,946 produced in the preceding year. Ontario was as usual the principal producer. The 9 plants operating in this province accounted for practically the whole Canadian output.

Because of its association with other building materials, data regarding the production of sand-lime brick are included in this report. Statistics relating to sand-lime brick are not included in the totals for structural materials industries as both the sand and lime used have been so recorded; production of sand-lime brick is regarded as a manufacturing operation and therefore is shown in the report on the *Manufactures of Non-Metallic Minerals*, issued annually by the Bureau.

Table 224.—Sand-Lime Brick Manufactured in Canada, by Provinces, 1923, 1924 and 1925

Province	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
	M	\$	M	\$	M	\$
Ontario.....	59,080	887,960	54,410	604,275	61,506	748,393
Manitoba.....	1,000	10,000	1,104	11,040	2,363	33,162
Saskatchewan.....			359	4,631		
<b>Total.....</b>	<b>60,080</b>	<b>897,960</b>	<b>55,873</b>	<b>619,946</b>	<b>63,869</b>	<b>781,555</b>

## SLATE

The entire production of Canadian slate comes from deposits situated along the south shore of the St. Lawrence river in the province of Quebec. Mining of slate has been carried on in the province since about 1854, the maximum production, 6,935 tons valued at \$119,160, occurring in the year 1889. There has been no production of slate from the quarries in Melbourne township, Quebec, since 1923. The total sales for 1923, amounting to 1,836 tons valued at \$17,289, consisted of crushed green and red slate, for use in the manufacture of roofing paper. During 1922, the production amounted to 1,899 tons of crushed slate valued at \$14,871.

Imports of slate products into Canada during 1925 were valued at \$205,507 as compared with \$220,402 in 1924. Customs' figures did not show any exports of slate.

Table 225.—Production in Canada and Imports of Slate, 1923, 1924 and 1925

	1923		1924		1925	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
PRODUCTION—						
Crushed.....Tons	1,836	17,289				
IMPORTS—						
Roofing.....Squares...	5,905	67,507	5,718	71,298	4,411	50,331
School-writing.....		111,922		74,879		102,878
Pencils.....		9,027		7,601		4,810
Mantles and manufactures of slate, n.o.p.		77,390		66,624		47,488
<b>Total.....</b>		<b>265,846</b>		<b>220,402</b>		<b>205,507</b>

## STONE

Production of stone in Canada during 1925 totalled 5,706,119 tons valued at \$7,464,777. In 1924, the shipments amounted to 4,768,014 tons worth \$6,407,757. With the exception of the record production of 1920, the 1925 value exceeds that of all other years. Ontario was the leading producer accounting for 53 per cent of the total quantity; Quebec followed with 39.3 per cent. The other provinces in order of tonnage produced were: British Columbia, Nova Scotia, Manitoba, and New Brunswick.

The kinds of stone quarried included granite (trap-rock, syenite, and other igneous rock), limestone, sandstone and marble.

The quantities of limestone quarried and used in the manufacture of lime by the operator have not been included under this industry; only the quantity and value of lime are recorded in order to avoid duplication of entries.

Table 226.—Production of Limestone and Sandstone in Canada\*, 1909-1925

Year	Lime- stone	Sand- stone	Year	Lime- stone	Sand- stone	Year	Lime- stone	Sand- stone
	\$	\$		\$	\$		\$	\$
1909.....	2,139,691	374,179	1915.....	2,312,081	249,336	1921.....	5,155,046	78,036
1910.....	2,249,576	502,148	1916.....	2,224,091	146,244	1922.....	4,175,941	80,908
1911.....	2,594,926	451,183	1917.....	2,283,659	261,256	1923.....	4,475,921	66,547
1912.....	2,762,936	329,352	1918.....	2,312,403	102,750	1924.....	4,831,684	240,273
1913.....	3,204,091	396,782	1919.....	3,074,815	86,577	1925.....	5,049,563	145,757
1914.....	2,672,781	487,140	1920.....	5,665,693	165,149			
						<b>Total.....</b>	<b>57,214,898</b>	<b>4,163,617</b>

\*Data not available prior to 1909.

Table 227.—Production of Granite and Marble in Canada, 1886-1925

Year	Granite	Marble	Year	Granite	Marble	Year	Granite	Marble
	\$	\$		\$	\$		\$	\$
1886.....	63,909	9,900	1900.....	80,000		1914.....	2,176,602	132,533
1887.....	142,506	6,224	1901.....	155,000		1915.....	1,525,553	158,027
1888.....	147,305	3,100	1902.....	210,000		1916.....	1,247,267	118,810
1889.....	79,624	980	1903.....	200,000		1917.....	639,412	55,820
1890.....	65,985	10,776	1904.....	150,000		1918.....	590,871	550
1891.....	70,056	1,752	1905.....	226,305		1919.....	850,563	213,982
1892.....	89,326	3,600	1906.....	278,419		1920.....	1,508,916	240,593
1893.....	94,393	5,100	1907.....	194,712		1921.....	937,894	172,720
1894.....	109,936		1908.....	282,320	125,000	1922.....	1,486,250	231,894
1895.....	84,838	2,000	1909.....	454,824	158,441	1923.....	1,159,303	201,518
1896.....	106,709	2,405	1910.....	739,516	153,779	1924.....	1,013,345	322,455
1897.....	61,934		1911.....	1,119,865	162,783	1925.....	2,014,535	254,922
1898.....	81,073		1912.....	1,373,119	260,764			
1899.....	90,542		1913.....	1,653,791	249,975	<b>Total.....</b>	<b>23,556,518</b>	<b>3,265,403</b>

Table 228.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1924

Item	Nova Scotia	New Brun-	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—								
Rough.....	Tons 1,738		33,937	15,752	815		6,785	59,027
	\$ 19,740		207,632	44,539	9,498		40,713	322,172
Dressed.....	Tons	30	20,644	1,149	1,200	80	650	23,753
	\$	1,500	711,651	36,545	30,570	2,455	83,500	866,221
Monumental and ornamental—								
Rough.....	Tons 193	1,141	9,446	1,609				12,391
	\$ 2,338	16,384	127,143	10,312	39			156,216
Dressed.....	Tons 201	481	636	65			950	2,333
	\$ 17,059	45,825	27,668	3,696			67,098	160,846
Flagstone.....	Tons			719				719
	\$			5,764				5,764
Curbstone.....	Tons	702	11,383	6			200	12,291
	\$	8,043	56,331	71			3,000	67,495
Paving blocks.....	Tons	292	6,858	7,642				14,792
	\$	4,171	96,957	61,184				162,312
Limestone, for flux.....	Tons 54,899		7,373	218,429			24,421	305,122
	\$ 49,789		7,843	197,303			14,652	269,592
Limestone for sugar factories, chemical works, etc.....	Tons	11,732	68,931	104,207			2,632	187,502
	\$	24,556	66,880	69,165			7,229	167,830
Rubble and riprap.....	Tons 8,334		15,205	90,888	5,945	200	48,036	168,608
	\$ 16,364		10,692	67,182	7,415	100	39,920	141,673
Crushed.....	Tons 2,170	4,851	1,417,676	2,399,707	46,103	16,418	94,551	3,981,476
	\$ 6,534	14,132	1,612,623	2,293,602	46,354	16,762	97,629	4,087,636
<b>Total.....</b>	<b>Tons</b>	<b>19,229</b>	<b>1,592,089</b>	<b>2,840,173</b>	<b>54,065</b>	<b>16,698</b>	<b>178,225</b>	<b>4,768,014</b>
	<b>\$</b>	<b>111,824</b>	<b>2,925,520</b>	<b>2,789,368</b>	<b>93,876</b>	<b>19,317</b>	<b>353,741</b>	<b>6,407,757</b>
Per cent of total.....	Quantity	1-4	0-4	33-4	59-6	1-1	3-7	100-0
	Value	1-7	1-8	45-7	43-5	1-5	5-5	100-0

Table 229.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1925

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—								
Rough.....	Tons 535		28,389	16,166	9,221		2,026	56,337
	\$ 3,827		233,523	163,755	39,702		10,775	451,582
Dressed.....	Tons	461	28,441	1,327	2,300		197	32,726
	\$	19,334	704,252	33,112	86,261		13,840	855,799
Monumental and ornamental—								
Rough.....	Tons 29	613	10,171	657			135	11,605
	\$ 1,000	10,026	102,251	6,068			15,433	134,778
Dressed.....	Tons 429	508	1,503	63			1,260	3,763
	\$ 28,021	45,166	59,584	3,496			53,000	189,267
Flagstone.....	Tons		200	666				866
	\$		250	5,325				5,575
Curbstone.....	Tons		24,989	4,347			100	29,436
	\$		75,132	28,042			1,500	104,674
Paving blocks.....	Tons	136	16,385	9,191				25,712
	\$	3,153	137,974	72,849				213,976
Limestone, for flux.....	Tons 84,239		6,500	223,410			49,543	363,692
	\$ 70,742		6,390	197,479			37,138	311,749
Limestone for sugar factories, chemical works, etc.	Tons 14,000		107,655	53,057			7,299	182,011
	\$ 25,800		79,469	39,306			15,259	159,834
Rubble and riprap.....	Tons 12,690		319,778	81,820	4,435		36,801	455,524
	\$ 24,618		573,455	69,963	7,362		31,019	706,417
Crushed.....	Tons 4,203	9,673	1,698,905	2,632,008	36,814	3,979	158,865	4,544,447
	\$ 6,478	21,264	1,883,175	2,197,938	55,171	6,868	159,232	4,330,126
<b>Total.....</b>	<b>Tons 102,125</b>	<b>25,391</b>	<b>2,242,916</b>	<b>3,022,712</b>	<b>52,770</b>	<b>3,979</b>	<b>256,226</b>	<b>5,706,119</b>
	<b>\$ 134,686</b>	<b>124,743</b>	<b>3,855,455</b>	<b>2,817,333</b>	<b>188,496</b>	<b>6,868</b>	<b>337,196</b>	<b>7,464,777</b>
Per cent of total.....	Quantity 1.79	0.45	39.31	52.97	0.92	0.07	4.49	100.0
	Value 1.80	1.67	51.65	37.74	2.53	0.09	4.52	100.0

Table 230.—Production of Stone in Canada, by Kinds and by Provinces, 1924

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	7,554	33,021	57,069	56,323			2,912	22,480
New Brunswick.....	4,921	80,812	14,308	33,299				
Quebec.....	42,283	442,933	1,465,237	2,058,432	4,379	322,455	80,190	101,700
Ontario.....	214,691	208,219	2,614,911	2,551,111			10,571	30,038
Manitoba.....			54,065	93,876				
Alberta.....			16,418	16,762			280	2,555
British Columbia.....	150,522	248,360	27,053	21,881			650	83,500
<b>Canada.....</b>	<b>419,971</b>	<b>1,013,345</b>	<b>4,249,061</b>	<b>4,831,684</b>	<b>4,379</b>	<b>322,455</b>	<b>91,603</b>	<b>240,273</b>

Table 231.—Production of Stone in Canada, by Kinds and by Provinces, 1925

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	14,961	54,524	84,939	73,717			2,225	6,445
New Brunswick.....	9,027	89,731	16,364	35,012				
Quebec.....	491,986	1,363,220	1,677,514	2,160,790	3,046	254,922	70,370	76,523
Ontario.....	263,567	242,150	2,750,115	2,530,621			9,030	44,562
Manitoba.....			52,770	188,496				
Alberta.....			3,979	6,868				
British Columbia.....	192,177	264,910	58,172	54,059			5,877	18,227
<b>Canada.....</b>	<b>971,718</b>	<b>2,014,535</b>	<b>4,643,853</b>	<b>5,049,563</b>	<b>3,046</b>	<b>254,922</b>	<b>87,502</b>	<b>145,757</b>

Table 232.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1924

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Building—		\$		\$		\$		\$
Rough.....	11,905	85,175	40,875	163,825	912	36,471	5,335	36,701
Dressed.....	3,810	81,826	16,575	416,760	2,588	280,280	780	87,355
Monumental and ornamental—								
Rough.....	12,223	154,184	97	1,194			71	838
Dressed.....	2,298	159,706	35	1,140				
Flagstone.....			5	52			714	5,712
Curbstone.....	12,275	67,331	16	164				
Paving blocks.....	14,602	160,612					190	1,700
Limestone, for flux.....			305,122	269,592				
Limestone for sugar factories, chemical works, etc.....			187,502	167,830				
Rubble and riprap.....	56,650	55,593	104,445	78,113			7,513	7,967
Crushed.....	306,208	248,918	3,594,389	3,733,014	879	5,704	80,000	100,000
<b>Total.....</b>	<b>419,971</b>	<b>1,013,345</b>	<b>4,249,061</b>	<b>4,831,684</b>	<b>4,379</b>	<b>322,455</b>	<b>94,603</b>	<b>240,273</b>

Table 233.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1925

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Building—		\$		\$		°		\$
Rough.....	7,480	41,657	47,382	375,016	940	31,082	535	3,827
Dressed.....	11,627	236,651	18,696	378,194	2,106	223,840	297	18,114
Monumental and ornamental—								
Rough.....	11,359	134,295	246	483				
Dressed.....	3,580	188,513	183	754				
Flagstone.....			200	250			666	5,325
Curbstone.....	25,089	76,632					4,347	28,042
Paving blocks.....	25,712	213,976						
Limestone, for flux.....			363,692	311,749				
Limestone for sugar factories, chemical works, etc.....			182,011	159,834				
Rubble and riprap.....	292,166	542,377	92,071	86,271			71,287	77,769
Crushed.....	594,705	580,434	3,939,372	3,737,012			10,370	12,680
<b>Total.....</b>	<b>971,718</b>	<b>2,014,535</b>	<b>4,643,853</b>	<b>5,049,563</b>	<b>3,046</b>	<b>254,922</b>	<b>87,502</b>	<b>145,757</b>

Table 234.—Production in Canada, by Kinds and by Provinces, and Imports and Exports of Stone, 1923, 1924 and 1925

	1923		1924		1925	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION, BY KINDS—</b>						
Granite.....	398,432	1,159,303	419,971	1,013,345	971,718	2,014,535
Limestone.....	3,687,663	4,475,921	4,249,061	4,831,684	4,643,853	5,049,563
Marble.....	2,473	201,518	4,379	322,455	3,046	254,922
Sandstone.....	22,766	66,547	94,603	240,273	87,502	145,757
<b>Total.....</b>	<b>4,111,334</b>	<b>5,993,289</b>	<b>4,768,014</b>	<b>6,407,757</b>	<b>5,706,119</b>	<b>7,464,777</b>
<b>PRODUCTION, BY PROVINCES—</b>						
Nova Scotia.....	138,682	177,090	67,535	111,824	102,125	134,686
New Brunswick.....	22,448	166,083	19,229	114,111	25,391	124,743
Quebec.....	1,102,876	2,332,821	1,592,089	2,925,520	2,242,916	3,855,455
Ontario.....	2,630,924	2,859,152	2,840,173	2,789,368	3,022,712	2,817,333
Manitoba.....	51,304	118,277	54,065	93,876	52,770	188,496
Alberta.....			16,698	19,317	3,979	6,868
British Columbia.....	165,100	249,866	178,225	353,741	256,226	337,196
<b>Canada.....</b>	<b>4,111,334</b>	<b>5,993,289</b>	<b>4,768,014</b>	<b>6,407,757</b>	<b>5,706,119</b>	<b>7,464,777</b>
<b>IMPORTS—</b>						
Building stone, other than marble or granite, sawn on more than two sides, but not sawn on more than four sides.....	943	19,821	240	3,619	285	4,143
Building stone other than marble or granite, planed, turned, cut or further manufactured than sawn on four sides.....	334	18,700	276	10,886	231	7,917
Flagstone, granite, rough sandstone, and all building stone, not hammered, sawn or chiselled.....		180,608		170,555		134,170
Flagstone and building stone, other than marble or granite, sawn on not more than two sides.....		184,421		82,639		97,875
Granite, sawn only.....		13,151		2,226		2,255
Granite, manufactures of, n.o.p.....		145,713		138,011		158,614
Marble, rough, not hammered or chiselled..		48,360		60,544		67,507
Marble, sawn or sand rubbed, not polished..		163,004		192,181		174,029
Marble, manufactures of, n.o.p.....		82,442		38,655		40,293
Paving blocks.....		61		3,168		
Refuse stone.....	392,819	225,565	281,824	174,738	160,997	100,544
Manufactures of stone, n.o.p.....		52,048		36,103		37,645
<b>Total.....</b>		<b>1,133,894</b>		<b>913,325</b>		<b>824,992</b>
<b>EXPORTS—</b>						
Crushed.....	89,434	159,088	59,984	100,873	42,518	81,764
Ornamental, rough*.....	3,165	30,350	3,390	45,195	3,430	36,552
Building, rough†.....	1,302	12,575	2,059	18,680	4,166	14,389
Dressed.....		20,227		5,365		5,687
<b>Total.....</b>		<b>232,240</b>		<b>170,113</b>		<b>138,392</b>

\*Granite, marble, etc., unwrought. †Freestone, limestone, etc., unwrought.



## PART TWO

### GENERAL STATISTICS

*Supplementing the statistics reported in Part One, general reviews have been prepared showing for each principal group in the mineral industry of Canada, statistics of capital employed, number of employees, salaries and wages paid, fuel and electricity used, and power units employed. Following a general review of the mineral industry in Canada as a whole, there is a series of short articles, each of which traces the development of the mineral industry in a single province. General tables present the principal statistics of the industry as a whole, as well as by groups, and by provinces. There are separate sections each dealing with the general statistics pertaining to a particular industrial group, as the copper-gold-silver industry, nickel-copper industry, asbestos industry, etc.*

## GENERAL STATISTICS

### REVIEWS OF THE MINERAL INDUSTRY OF CANADA AND ITS PROVINCES

To meet the very general demand for a more comprehensive review of the mineral industry than is afforded by a record of commodity output, as presented in Part One of this report, there have been collected in the following pages, data on the industry in its many phases, which are designed to give the reader a wider knowledge of the growth and importance of Canada's third greatest primary industry. In order to present the subject in as acceptable form as possible this part of the report has been arranged in two main groups. The first section reviews the industry in each province, tracing the developments in the leading fields. Then follow general tables presenting for the whole of Canada, data on the number of mines in operation, capital employed by main groups of enterprises, the number of workers engaged and the sums spent in salaries and wages, cost of fuel and electricity, and details regarding plant equipment and power employed. Finally, there are individual sections devoted to a presentation of the leading features of each principal industrial group. In all these sections, the aim is to present in concise form, the salient points of interest in a subject that for great commercial importance and romantic charm is not excelled.

#### Canada

As a general introduction to the subject, the following paragraphs are of interest. They are taken from the official contribution of the *Canadian Institute of Mining and Metallurgy* to the Empire Mining and Metallurgical Congress held in London, England, June, 1924, as printed in the Transactions of the Canadian Institute of Mining and Metallurgy, 1924. The paper was prepared by Prof. R. P. D. Graham of McGill University, Montreal.

"It is almost exactly two hundred years since the foundations of the mining and metallurgical industries in Canada were laid. There was nothing spectacular about this early start. It had to do with the most basic phases of these industries—the mining of coal and iron ore, and the manufacture of cast and wrought iron. At several points along the coast of Cape Breton Island, coal seams may be seen outcropping quite conspicuously, and it is probable that they had been observed, and possibly worked in a small way, in very early times. However that may be, these coal seams have the distinction of being the first in North America of which there is any printed record, reference to them appearing in a volume by Nicolas Denys which was published in Paris in 1672. Regular coal mining in the district did not commence until about fifty years later, however.

"The metallurgists started their operations along the north shore of the St. Lawrence river. Here, at many points between Montreal and Quebec, are to be found deposits of bog iron ore, and in 1730 a furnace for smelting such ore was established on the St. Maurice river. The St. Maurice forges continued in operation until 1880, and throughout that long period they were famed for the fine quality of castings produced, and also for a superior wrought iron.

"Other occurrences of minerals were doubtless observed from time to time in these early days as settlements spread, and as trading posts were established farther and farther afield. Of special interest in this connection is a map of the lakes of Canada, published in 1744, on which is given the location of a deposit of argentiferous galena (Añce à la Mine) on the eastern shore of Lake Timiskaming. This is one of the oldest known metalliferous deposits in North America, and it was the scene of active mining operations as recently as 1901; and yet, for at least one hundred and sixty years after it was known, there lay awaiting discovery, less than ten short miles to the northwest, the almost fabulously rich silver veins of what is now known as the Cobalt district.

"However, isolated discoveries such as that on Lake Timiskaming must have been entirely the result of chance, and not of even haphazard prospecting. As for systematic prospecting, it can hardly be said to have existed in Canada until nearly the middle of the nineteenth century, since, before that time, little or nothing was known of the geology of the country. In 1843, however, the Geological Survey of Canada was instituted by the

Provincial Government, with Sir William Logan as Director. With a small but enthusiastic band of assistants, many of them explorers whom he himself had trained, he set about the Herculean task of exploring, mapping, and geologically surveying eastern Canada. So vigorously was the work prosecuted that in 1863 he was able to publish a very comprehensive '*Geology of Canada*,' a volume of nearly 1,000 pages dealing with the southern portions of the provinces of Ontario and Quebec, and accompanied by an Atlas of geological maps. Special attention, had been paid to mineral occurrences, both metallic and non-metallic, and where such were found or known, they were carefully examined as to their economic possibilities. These deposits are described in a section of 165 pages on economic geology.

"This period of 20 years, from 1843 to 1863, may be said to have marked the real inauguration of the mining industry in eastern Canada. Deposits of iron ore were opened up in various parts of Ontario and Quebec; numerous occurrences of copper ore were known and mined, especially in the Eastern Townships of Quebec, where the Acton mine had the reputation of being, in its time, the richest copper mine in the world; alluvial gold was obtained from the gravels of the St. Francis and other rivers on the south side of the St. Lawrence; and in Nova Scotia, lode-gold mining became established. This healthy growth of the industry may be attributed in very large measure to the influence of the Geological Survey. Both directly, as a result of its explorations and through the distribution of its reports and maps, and indirectly, by encouraging prospecting and disseminating information concerning Canada's mineral resources, especially through the exhibition of collections of Canada's minerals and ores at the principal British and International exhibitions, the Geological Survey played an enormously important part in firmly establishing the mineral industry of the Dominion, and in calling world-wide attention to Canada's actual and potential mineral resources. It only remains to add that Logan's successors in the Survey have at all times admirably maintained this close association and co-operation with the industry.

"Prior to the building of the Canadian Pacific railway across the continent, west Canada, beyond the Great Lakes was virtually isolated from the East. Settlement was slower, and it is thus not surprising that there is little or no record of mineral discoveries in the west until about the middle of the nineteenth century. Among the first of these was the finding of coal at Fort Rupert in 1835, and later, 1858, the important discoveries of placer gold along the Fraser and other rivers were made. Notwithstanding this late start, however, British Columbia soon became the premier mineral-producing province of the Dominion, a position it maintained until 1906.

"While the establishment of the Geological Survey marks the first important epoch in the history of Canada's mineral industry, the completion, in 1885, of the construction of the Canadian Pacific railway across the continent opened a second chapter, and one of tremendous expansion. Vast new territories were rendered accessible, and in these it was often the prospector who led the way, with consequences that soon made themselves evident. The first important find was made near Sudbury, Ontario, in 1883, when, in blasting a cutting for the railway, a body of nickel-copper ore, for which the district has since become world-famed, was encountered. Similar good fortune was in store for British Columbia, and the nineties witnessed the discovery of a remarkable succession of ore-bodies, especially auriferous copper and argentiferous lead-zinc deposits, in the southeastern section of the province, between the railway and the international boundary. An idea of the rapidity with which the mining industry expanded during this period is best conveyed by figures. Thus, while for the year 1886 the total mineral production of the Dominion had a value of \$10,221,255, seven years later in 1893, the value had doubled, and in 1903 it amounted to \$61,740,513.

"But this transcontinental railway did not open up the whole of Canada. It permitted of a channel sample being taken, and events have proved that it was probably no more than a fair average sample. As transportation facilities were improved and extended, other ore deposits were found, as, for example, the silver veins of the Cobalt district, discovered in 1903 during the construction of the Timiskaming and Northern Ontario railway; and, largely as a result of the output from such new mines, the value of the total mineral production had again more than doubled by 1913, to \$145,634,812. Fluctuations during and following

the war culminated in an output having the record value of \$227,859,665 in 1920; but apart from this abnormal period, the value of the annual mineral production has continued to rise.

"But other factors than the provision of increased transportation facilities have contributed to the remarkable growth of the industry. The staff of the Geological Survey has been considerably enlarged since the days of Logan, although it still remains painfully inadequate for the gigantic task with which it is entrusted, and much that might be accomplished with immediate benefit to the mining industry has perforce to remain undone. A Mines Branch also has been established, these two together constituting the Federal Department of Mines. Except in the newer provinces of Manitoba, Saskatchewan, and Alberta, and in the Yukon and Northwest Territories, the control of mining lands, the granting of mineral rights, and the administration of mining laws, come under the jurisdiction of the individual provinces, and each of these has its own department or bureau of mines. As a result, there are numerous parties of geologists in the field in every province each season, and a very large proportion of their work is directed to the examination and geological mapping of districts where mineral deposits are known to occur or where such might be expected. These several departments of mines have rendered invaluable assistance to the mining industry, through the distribution of reports and maps, the framing of intelligent mining laws, and in innumerable other ways.

"The universities have played their part by training the men necessary to direct and carry on the industry. The courses in mining and metallurgical engineering, and in general and economic geology, offered by the leading universities of the country have the reputation among mining men everywhere of being models of their kind, and it may be stated that the vast majority of those responsible for the operation of Canadian mines and metallurgical plants, as well as practically all the officers of the departments and bureaus of mines, are Canadians who have received their training in the country. Nor has the prospector, that essential, though perhaps not always sufficiently appreciated, prop of the industry, been forgotten, and at several centres the provincial departments of mines have from time to time established classes where he can obtain instruction in the rudiments of mineralogy and geology. It may not be out of place here to express the opinion that any young man who proposes to follow the mining or metallurgical profession in Canada would be well advised to obtain his training in Canada, and, if at all possible, to take an engineering course at one of the universities.

"As the industry grew, and the number of men engaged in it increased, a demand arose for an association of some kind, through which mining men might meet together from time to time for the discussion of mutual problems, and to present papers dealing with mining methods, metallurgical practice, and allied subjects. To meet this need, the General Mining Association of the province of Quebec was organized in January, 1891. In 1896 the Federated Canadian Mining Institute was established, and two years later the Canadian Mining Institute was incorporated, replacing the older organizations. For more than thirty years Nova Scotia has had its Mining Society, and in 1918 this became affiliated with the larger Canadian Mining Institute, which in 1920 broadened its title and became the Canadian Institute of Mining and Metallurgy. The Institute is thus representative of these industries from coast to coast, and its *Transactions* form a very complete history of the great progress which mining and metallurgical practice has made in Canada during the last quarter of a century."

### The Mineral Industry of Nova Scotia

Because of the geographical position of Nova Scotia on the Atlantic seaboard, this province was among the first in Canada to have its mineral resources explored. In mining, and especially in the production of bituminous coal, Nova Scotia has had an enviable reputation for over 200 years, while its gypsum deposits, which are among the most extensive in Canada, are only in the primary stage of development. In addition to those resources, there are deposits of iron, gold and antimony that have added much to the mineral wealth of the province. Non-metallics, such as dolomite, limestone, salt, grindstones, quartz and building stone, also have their place.

Protective tariff provisions designed to promote the coal-mining industry in Nova Scotia were made in 1877, when a duty was placed on American soft coal entering Canada; this made it possible for the Nova Scotia mine operators to compete with United States producers successfully in the markets along the St. Lawrence river. With the advent of the steel industry, using the iron ore from the neighbouring country of Newfoundland, the consumption of coal was further increased.

Gold was discovered in Nova Scotia about the year 1860, and the auriferous area has been variously estimated to represent from 3,000 to 5,000 square miles. Considerable work has been done on these gold ores, many of which contain arsenic, but of late there has not been much to report except that in the year 1923 when the price of arsenic was high, production was stimulated for a time.

Possibilities of production there are in many fields, but at the present time, Nova Scotia's mineral output is limited to the few commodities mentioned above.

### **The Mineral Industry of New Brunswick**

Although there are many important economic minerals in the province of New Brunswick, development of these resources has not been as rapid here as in other provinces of the Dominion, probably because of the general concealment of the rocks by forests, which adds to the difficulty of locating mineralized areas suitable for commercial development. Actual mining has not progressed therefore to the extent that geological indications would warrant and very little of the province has been prospected.

At present, activities are restricted mainly to the mining of bituminous coal, the quarrying of gypsum and stone, and the production of petroleum, natural gas, lime and clay products.

Coal is found at several places in the broad carboniferous belt, extending westward from the coast, in Albert and Kent counties through Kings, Queens, Sunbury and York. There is a well-known deposit near Minto, Grand Lake district, at Beersville, on the coal branch of the Richibucto river and at Dunsinane, thirty miles southwest of Moncton, but it has been worked economically only in the vicinity of Minto. Here, the seam runs from sixteen to thirty inches in thickness and is found at various depths down to 120 feet. The production of coal in 1925 amounted to 208,012 tons which was valued at \$815,367.

Gypsum ranks next to coal and is found in localized deposits. It is quarried at Hillsborough and part of the production is there made into plaster by the Albert Manufacturing Company, who have a large and well-equipped plant.

Natural gas and petroleum produced in New Brunswick come from the Stoney Creek district south of Moncton. Extensive deposits of bituminous or oil-shales occur in Albert and Westmorland counties near Moncton, but as yet these have not been worked commercially.

Other materials such as wolframite—the ore of tungsten, copper in the form of chalcopyrite, iron ore in the form of siliceous magnetite, antimony, manganese and tripolite have also been located but production of these minerals, with the exception of manganese, is now very limited.

### **The Mineral Industry of Quebec**

Quebec is the largest of all the Canadian provinces. It has a land and water area of 706,834 square miles, and comprises the territory lying between the Hudson Bay and Hudson Strait and Labrador on the north, the Gulf of St. Lawrence on the east, the province of New Brunswick and the United States on the south, and the province of Ontario on the west. Only the southern part of the province has ever been examined for mineralized areas, and until recently, interest has been focussed on the non-metallic minerals of the province, as the main source of mineral wealth. In 1922, copper ores carrying gold were discovered in what is commonly called Northern Quebec, but this term really refers to a section lying south of the main line of the Canadian National Railway, and just east of the Ontario boundary; it is a continuation of the mineralized belt of the Kirkland Lake area that has added to Ontario's prominence as a mining area during recent years. The development of this section

promises to be very extensive and with the introduction of transportation and smelting facilities, a large mining industry will no doubt be built up.

So far, the non-metallics have provided the greater part of the mineral output. Asbestos is the most important mineral product of Quebec. Other minerals, arranged in order of their relative importance are: mica, feldspar, magnesite, iron oxides, quartz, soapstone, pyrites, and graphite. In the older and better known sections of the province there are copper, lead and zinc properties, which are operated on a small scale. Molybdenite and chromite have also been mined at different times when the market warranted an output of these minerals.

In recent years the development of hydro-electric power in Quebec has proven a great stimulus to industrial activity, particularly in the Shawinigan Falls area. Other power sites have been, and are being developed on a large scale and there is no doubt that electro-chemical and electrometallurgical enterprises, as well as other productive concerns using large quantities of electric power in their processes, will thrive well in this province in the future.

### **The Mineral Industry of Ontario**

The province of Ontario may be described as the central province of the Dominion; Hudson Bay and James Bay are on the north, the St. Lawrence River and the Great Lakes constitute the greater part of the southern boundary, the province of Quebec lies immediately to the east, and Manitoba adjoins Ontario on the west. Traversing the province in easterly and westerly directions, the main lines of the Canadian National and Canadian Pacific Railways, with their many branch lines provide an extensive system of transportation. The main line of the Canadian Pacific Railway from Montreal to Winnipeg crosses the rich Sudbury section in a westerly direction, then runs along the north shore of lake Superior and through the lake of the Woods district. In the vicinity of Sudbury are the famous nickel-copper properties which supply the greater part of the world's nickel. The Timiskaming and Northern Ontario Railway connects North Bay and Cochrane and runs through the rich silver camps of the Cobalt and South Lorrain areas and has branch lines extending to other silver camps and to the gold camps of Kirkland Lake and Porcupine.

Mining was carried on in Ontario as far back as 1770, when copper was recovered from mines on the shores of Lake Superior. Thus, although very little mining of any consequence was done until recent years, this province early took its place in the mining history of Canada. About the year 1800, the first iron furnace in the province was erected in Leeds county, and a few years later a blast furnace for the smelting of bog ores was built at Normandale in Norfolk county. This initial effort proved a failure but later another attempt was made and smelting was carried on as a successful enterprise until 1847. Other iron furnaces were established in different parts of this older section of Ontario, but their operations were never very successful. In 1899 the Algoma Steel Corporation of Sault Ste. Marie opened the Helen mine on the northeast shore of Lake Superior, and other iron properties, namely the Maggie mine and the Moose Mountain mine, have also been operated by this company. At the present time there is practically no production of iron ore in Ontario, the steel companies finding it more economical to bring in ore from the United States.

Construction of the Canadian Pacific Railway in 1883 led to the discovery of the rich nickel-copper ores in the Sudbury districts. Fortunately, about this time also, it was found that the addition of nickel in the manufacture of steel armour plate made the plate much stronger and harder and therefore more useful. For some years after the opening up of the Sudbury area, one of the larger properties was operated as a copper mine, the nickel in the ore not being detected until about 1887; to-day, the presence of nickel in that ore is the more valuable component. About 90 per cent of the world's output of nickel comes from the Sudbury area. The deposits there are very great. These ores also carry precious metals such as gold, silver, platinum, palladium, rhodium, and other related metals.

Ontario has the distinction of having had the first producing oil well on the American continent. This well was dug at Oil Springs in Lambton county in the year 1858, and from that time forward, oil wells have been discovered in other sections of that part of Ontario. However, no large oil fields have been found since 1905, and consequently the annual production has been steadily declining despite the additional production of a few small new fields.

As far back as 1866 gold was discovered in a spectacular occurrence at the Richardson property, Hastings county, and that district was the scene of a small gold rush at that time. Other properties in the same vicinity were worked intermittently, but at the present time no gold is being recovered from that area. Other finds were made from time to time in various parts of the province, and in 1899 Ontario reported a production of the yellow metal valued at \$421,591.

Five years after this, the Timiskaming and Northern Ontario Railway was projected and built from North Bay in a northerly direction. This opened up a country of which, hitherto, little had been known, and fortunately, passed right through the now famous Cobalt area, which was thus discovered in 1903. The finding of such a rich silver deposit led to intense prospecting on either side of the railway; the silver camps of Gowganda, Elk Lake and South Lorrain and the rich gold areas of Porcupine and Kirkland Lake are the present outcome of these early endeavours.

Although the production of silver has fallen off to some extent in late years, intensive prospecting underground has resulted in the finding of blind veins in some of the older properties; these have helped to maintain the silver output. Gold production on the other hand has grown apace. Some companies with proven ore bodies have augmented their milling facilities, and increased their outputs. Through intensive underground exploration many others are changing prospects into mines.

Mention may here be made of the Silver Islet mine on an extremely small island off Thunder cape in lake Superior which was worked for fifteen years or more and which produced in the neighbourhood of \$3,500,000 worth of silver. This property was extremely rich, but was at one time flooded with water, and any attempt to work it since has met with very little success; diamond drilling has disclosed nothing of value at depth.

Lead is known to occur in different sections of Ontario, but until recent years little production was reported. In 1915, however, the Kingdon Mining, Smelting and Manufacturing Company, Limited, opened up a property near Galetta in Carleton county, and production of lead has increased steadily since that time.

Ontario mineral deposits include a large number of non-metallic minerals of economic value. The largest mica mine in Canada is located near Sydenham in Frontenac county, and this county also supplies the greater part of the feldspar produced in the province. Talc is mined in the vicinity of Madoc in Hastings county. The salt-producing sections of the province are in the southwestern part. No rock salt is mined, the entire output coming from brine pumped from wells; the development of the salt industry dates back to 1865 when the first well was sunk at Goderich in Huron county in a search for oil.

Natural gas was discovered in Ontario in December, 1888, in Essex county near the present town of Leamington, and in the following year a well was opened up in Welland county about 25 miles west of Niagara Falls. At that time there was little market in Canada for natural gas, so the gas from these wells was piped to the neighbouring cities of Detroit, Toledo and Buffalo. Some of the older wells are now becoming depleted, but new wells are brought in from time to time. The natural gas supply, however, is now being conserved under government supervision so that the most economic use may be made of the available supply.

The growth of the clay products and construction materials industry has grown with the increasing demand for such commodities. Portland cement is manufactured in various sections of the province where suitable limestone and clay have been found at convenient distances from the large markets for this class of material. Hydrated lime and quicklime are also being manufactured and the growth of the brick industry has been rapid. The construction of highways and the building of concrete structures has enlarged the demand for gravel and crushed stone. These apparently common materials form a very large part of the non-metallic mineral production of the province.

### The Mineral Industry of Manitoba

Most of the material in this section is taken from a paper prepared by Prof. R. C. Wallace of the University of Manitoba, who is recognized as a leading authority on the mineral possibilities of Manitoba.

The earlier work on the mineral resources of the province was confined to non-metallic materials. This was to be expected in an area where the population was massed in the agricultural lands where metallic deposits do not occur, and where building materials and other non-metallic minerals are in demand. The earliest mineral industry was the extraction of salt from the brine springs on the west side of lake Manitoba and lake Winnipegosis. From this source freedmen from the Hudson's Bay Company service manufactured salt during the period 1800-1876, and probably even earlier, and supplied the needs of the posts and settlements on the Assiniboine, Red and Saskatchewan rivers. As agricultural communities grew, and as the Fort Garry Settlement reached the proportions of a town, building materials came into demand. The outcrops of limestone at Lower Fort Garry, Bishop's Quarry, near St. Andrew's Locks, the East Selkirk beds, and later Garson (Tyrdall) supplied the stone for foundations and for the more imposing buildings; while the limestone boulders which were plentifully distributed in the drift materials were everywhere burnt for lime. In the late nineties the gypsum deposits northwest of lake St. Martin were opened up, and the calcined product was conveyed by boat from old Gypsumville, on lake Manitoba, to Totogan and thence by rail to Winnipeg. From that date there has been continuous operation of the gypsum industry, though the route is now all-rail, and the gypsum is calcined in Winnipeg. In the present century the brick industry developed at several towns in the province, a natural cement plant was established at Babcock, and a Portland cement plant at Tuxedo, using limestone drawn from lake Manitoba. Except for the years of stagnation following the war, the building material industry has had a steady and healthy growth.

In fuels, the history of development has been less encouraging. While the coal deposits of Alberta were yet untouched considerable interest was shown in the coal seams which were known to occur in Turtle mountain in southwestern Manitoba. During the nineties of the last century mining was done on the northwestern flank of the mountain at the old McArthur mine, and at the Varden mine; but for over twenty years no coal has been mined in that area. The opening of the Estevan field, from which the first coal was brought down the Souris river to Winnipeg by barge, has made available a lignite area of much greater extent and more feasible exploitation: and the Turtle mountain area will, in future, probably serve only local demand. In many places, drilling has been carried on for oil, but without success; though at Waskada and in isolated wells elsewhere natural gas has been found in quantities sufficient for local use.

The history of metalliferous mining development lies within the last fifteen years. Some prospecting had been done before 1910 in the northern areas of the province, but development work dated from that time. The stimulus, which successful gold-mining development in northern Ontario has given since that date, to Canadian mining has had a marked effect on exploratory work in northern Manitoba. The actual result in established mining industry is as yet small. A small high-grade copper sulphide deposit was mined at the Mandy property in northwestern Manitoba during the years 1916-1919. The Rex mine has been producing gold while development work is proceeding. From the Luleo and Gold Pan properties east of lake Winnipeg some gold was produced. But during those years of search, a large low-grade copper sulphide deposit was discovered in northwestern Manitoba in the Flin Flon property which has been carefully investigated, and will be developed when conditions are favourable. Gold has been found in several areas, north of the Hudson Bay Railway, and east of lake Winnipeg, and important mining companies are engaged in developing prospects in those several fields. There is as well a changing attitude on the part of the people of the province, and the belief has gained ground during those years of exploration that the Precambrian areas of Manitoba—more than three-fifths of the land surface of the province—may, through judicious expenditures of capital, yield a return in gold and copper which will be an important contribution to the wealth of the province.

### **The Mineral Industry of Saskatchewan**

Saskatchewan, the great grain-growing province of the Dominion, lies between Alberta and Manitoba. While the greatest development in this province so far has been in agriculture, there is each year an appreciable production of lignite coal, clays and clay products, sand and gravel, sodium sulphate, and occasionally other mineral products. Large clay deposits, both of fireclay and of clay suitable for the manufacture of pottery, occur south

of Moose Jaw and the economic development of these deposits on a great scale is only a matter of time. Large areas of unprospected territory in the northern part of the province are underlain by the same Precambrian rocks that have proved mineral-bearing in other parts of Canada. In this territory lode gold has been reported near Beaver lake, and iron and other metallic minerals near lake Athabasca. In connection with the sodium sulphate deposits, it may be noted that these occur as lakes which are solid at certain seasons, and mushy or even liquid at other times. Investigations have been carried on for several years by the Mines Branch at Ottawa to determine the commercial possibilities of these areas. Available tonnage has been blocked out and some deposits have been worked successfully. Shipments of sodium sulphate from Saskatchewan have reached Ontario points and the use of the natural sulphate has partially replaced the manufactured product in some fields. Development of the lignite deposits has progressed to a greater extent in Saskatchewan than the production of any other mineral in that area. Most of the mines are operated on a small scale, largely to meet the needs of the surrounding country, and many of them are only worked in the winter months, as the owners find it more profitable to grow wheat than to mine coal during the summer season.

### **The Mineral Industry of Alberta**

The province of Alberta lies immediately east of British Columbia, the summit of the Rocky Mountains marking its western boundary as far north as 54°, north latitude. From that point, northerly, the line follows the 120th meridian to Mackenzie district. Alberta is for the most part, a grazing and wheat-growing country, but the coal mines which are located in the area immediately to the east of the mountains, contribute largely to the mineral production of Canada. Natural gas is also of considerable importance in Alberta as a fuel for domestic and industrial purposes. Prospecting for oil has been carried on over considerable areas and some success has been attained. Gold is also known to occur in the gravels underlying some of the rivers.

As in Ontario, where the opening of mining areas followed the building of railroads, so also the construction of the Canadian Pacific Railway and the Canadian National Railway through the mountain led to the economic exploitation of the coal areas in Alberta. The famous Crow's Nest Pass, through which the southerly branch of the Canadian Pacific Railway transcontinental line passes, has coal within easy proximity to the railroad. Along the main line of the same railway which enters the mountains near Calgary and Banff, a large amount of work has also been done in the vicinity of Bankhead, and quantities of semi-anthracite coal have been produced, but these workings are closed down at the present time. The Canadian National Railway running west from Edmonton passes through coal areas for a considerable distance.

Deposits of bituminous sands in the northern part of the province along the Athabasca river have become of economic importance in recent years. Experiments are being carried on by the University of Alberta at Edmonton, and by officials of the Mines Department at Ottawa, on methods of extracting the bitumen from the sands.

### **The Mineral Industry of British Columbia**

British Columbia, Canada's mountain province, has been associated with mining for many years. From the early days of the Cariboo rush in 1858 which followed the finding of placer gold in California in 1849, until the present time, this western province has always occupied a conspicuous place in the mineral industry of the Dominion. It is a province of mountains and valleys, swift running rivers and wide fertile tracts between the main ranges. It has an area of 355,855 square miles in extent, of which 353,416 square miles are land and 2,439 square miles are covered with water.

Broadly speaking there are three main mountain systems, the Coast range, on the west, the Columbia system which includes the Cariboo, Selkirk, and Purcell ranges in the centre and the Rocky Mountains on the east, the summit of the latter forming the provincial boundary of Alberta and British Columbia as far north as latitude 54°.

In the southerly sections of the province the main rivers are the Fraser, the Columbia and their tributaries while farther north, the Skeena, the Stikene and the Naas and their tributaries empty into the Pacific ocean. The Peace river, which has its headwaters in the

northeastern section, flows in a southeasterly direction and then north to Great Slave lake in Mackenzie district after which it joins the Mackenzie river by way of the Liard, and thence reaches salt water at the Arctic ocean.

Transportation which did so much to open up the southern section of the province when the Canadian Pacific Railway was built, has been greatly augmented in recent years by the construction of the Canadian National Railway to Prince Rupert, the Pacific Great Eastern from Squamish to Prince George, and the Canadian National down through the central sections of the province to tide-water at Vancouver.

As soon as the easily-won gold began to show signs of depletion from the creek bottoms mining men commenced to prospect for mineral in place, and to-day, British Columbia has in the Sullivan mine, the largest lead-zinc mine in the British Empire, leads all the other provinces in copper production, and stands second in gold and silver.

Coal is British Columbia's most important non-metallic mineral. It is found in abundance on the east coast of Vancouver island, in the south-eastern portion of the province, and also to a less extent, in small detached basins in the northern section of the province. Other non-metallics produced in 1925 were quartz, pyrites, fluorspar, natro-alunite, pulpstones, sodium carbonate, talc, iron oxides and gypsum.

As arranged, at the time British Columbia joined Confederation, all geological work and mapping is done by the Dominion Government, and parties are sent annually to British Columbia for this purpose. The Provincial Department of Mines assists very materially in the opening up and development of prospects and mines. The province is divided into six mining districts, each supervised by a resident engineer, whose duty it is to carry on mineral surveys and to assist prospectors and others with such advice as may be necessary and may come within the scope of a mining engineer's work.

Among the outstanding mines of British Columbia are the Premier mine, a gold and silver property situated at the northerly end of the Portland canal in northern British Columbia, and the Sullivan mine, a rich lead and zinc deposit, at Kimberley in East Kootenay, owned and operated by the Consolidated Mining and Smelting Company of Canada, Limited. Leading copper properties, operated by the Granby Consolidated Mining, Smelting and Power Company of Anyox on the Portland canal in northern British Columbia, and by the Britannia Mining and Smelting Company on Howe Sound, a short distance north of Vancouver, contribute largely to the copper production of the province. Many silver-lead-zinc mines of the Slokan district that have been operated intermittently for a number of years, have been given a new lease of life recently because of the developments in smelter practice and because of the comparatively high prices which the metals from such ores now command.

The Premier mine was finally brought to the producing stage and into the dividend class by the American Smelting and Refining Company, Limited, who acquired the controlling interest in this mine in the fall of 1919.

The Nickel Plate mine at Hedley in the Similkameen Valley is of interest as it is the only property in the province credited as being a producer of arsenic. The ore from this mine is concentrated and cyanided, the concentrates being shipped to Tacoma for treatment. Payment is made for some of the arsenic as well as for the gold content. Gold bullion from this mine is shipped to the Dominion Assay Office at Vancouver.

Successful research work carried on by the staff of the Consolidated Mining and Smelting Company of Canada, Limited, at Trail, with respect to economic recovery of the metals from the refractory ores of the Sullivan mine, proved so satisfactory that when the large concentrator was put into commission at Kimberley, recoveries exceeded expectations, the result being that the smelter and refinery at Trail were not large enough to handle the output of the mine; this temporary limitation made it necessary to export zinc concentrates to Belgium and to the Anaconda Copper Company at Black Eagle, Montana, U.S.A.

### **The Mineral Industry of the Yukon Territory**

The Yukon Territory lies in the extreme northwest section of the Dominion of Canada. Immediately to the west is Alaska, and on the east, the Mackenzie district, while the province of British Columbia is adjacent to the greater part of its southern boundary.

Alaska was originally owned by Russia, and it comprised that territory lying west of the present Yukon Territory, and a section of the western coast down as far as a long narrow inlet known as the Portland Canal. Russia claimed the north Pacific coast down to latitude  $51^{\circ}\text{N}$ , but in the treaty of 1824 the boundary was fixed at  $54^{\circ} 40'\text{N}$ , and in the following year a treaty was concluded by which Russia relinquished to Great Britain her claim, not only to the region below  $54^{\circ} 40'\text{N}$ , but also to the vast interior occupied by the Hudson's Bay Company up to the frozen ocean. In 1825, the southern and western boundaries of the British possessions were established, but owing to certain ambiguity, the boundary between what are now British Columbia and Alaska, was not very well established. In 1867, Alaska was purchased from Russia by the United States. In the summer of 1896, alluvial gold was found in the Yukon District, and immediately a section of the North American continent which up to this time had been considered of little economic value, became the cause of serious controversy between Canada and the United States because of the doubt as to the proper location of the boundary line of Alaska. Finally, the question was settled in 1903 by the award of the Alaska Boundary Tribunal.

The main rivers of this territory are the Peel, the Porcupine, the Yukon and its tributaries such as the White river, the Stewart river and the Pelly. Dawson City, which had a population of 9,142 during the gold boom, is occupied now by 975 people. There is one railroad, the White Pass and Yukon, which runs from Skagway, Alaska, northerly to White Horse. From there, passengers embark on the river boats and go down the Yukon river to Dawson City. The railroad was constructed along the route most travelled during the days in which the early prospectors were entering the territory.

When the news of the wonderful gold discoveries reached the outside world, men from all walks of life flocked to this new district, and the stories of the hardships of the life have been told in prose and verse by Robert W. Service, a young bank clerk who lived through the days when Dawson City was at its height.

Between 1898 and 1905 upwards of a \$100,000,000 in gold was taken from the gravels of Bonanza, Eldorado, Hunker, Dominion and Sulphur Creeks and their tributaries. Many of the famous creek claims on Bonanza and Hunker are now being worked by the dredging process, and the terraces of the equally famous White Channel are being washed down by hydraulic methods.

Since 1905, production of gold has gradually decreased; in 1919, the output was valued at about \$1,900,000 and in 1925 at \$989,000. Although there are a great many individual miners, the report of their production is not very extensive and the greater part of the gold is recovered by large hydraulic or dredging companies; five such companies report annually.

Of late years, the Mayo district on the Stewart river has come into prominence because of the silver-lead ore discovered there. Two companies, the Treadwell Yukon and the Keno Hill, operated in this district during 1925. The ore is mined under difficult climatic conditions, and is taken down to the river and piled there ready for transportation to the smelters when navigation opens. Because of the high cost entailed in shipping this ore to the smelter, only high-grade material can be transported economically, and in order to prepare lower grade ore for shipping the Treadwell Yukon Mining Company, Limited, has constructed a concentrator where custom ore as well as their own is treated.

Other economic minerals such as copper and antimony are known to occur but up to the present time there has been no report of production.

Among the non-metallic minerals coal is the only one of any importance and it is known to occur in the Yukon in at least eighteen distinct areas. In thirteen of these, coal of economic importance has been discovered. The production, however, has been small, partly because there has been little demand for coal and partly because only very few of the properties are conveniently situated for shipping purposes.

### GENERAL TABLES

Under this section are included the principal statistics for the year 1925 and they are shown under the three main headings Metallics, Non-Metallics and Structural Materials and Clay Products. In the section on metallics the net values given to ore shipped by the

mines, were in many cases nominal and were made up from book values used by the companies in crediting the mining part of their enterprises.

In the metallic section it has been found difficult to separate the actual mining operations from milling and these are taken as one. The smelting or refining operations have been separated where possible from milling operations and reviewed under the title "Metallurgical Works."

The values of the metallic production given in the following tables were as reported by the operating companies and in each case were the settlements received for shipments. The totals, therefore, indicate more nearly the actual return to the different industries than do the values for the several metals in Part I of this report where in the majority of cases the values are computed by using the average New York prices for the year. The tables immediately following cover every branch of the three main divisions of the mining industry and show shipments and net returns, capital employed, number of employees, salaries and wages paid, fuel costs, and power used throughout the industry.

**Table 235.—Summary of Principal Statistics Relative to the Mineral Industry, in Canada, 1925**

	Number of active operat- ors	Number of operat- ing plants or mines	Capital employed	Number of em- ployees	Salaries and wages paid	Cost of fuel and elec- tricity	*Net value of bullion, ore, concen- trates or residues shipped from the mines, and smelters
			\$		\$	\$	\$
<b>METALLIC—</b>							
Auriferous quartz mining and milling....	52	52	84,964,062	7,052	11,931,948	1,836,050	35,035,361
Silver-cobalt mining and milling.....	33	38	44,045,619	1,788	2,576,414	498,874	6,611,644
Silver-lead-zinc mining and milling.....	89	94	15,735,930	2,538	3,867,613	584,121	21,902,686
Copper-gold-silver mining and milling....	40	41	123,200,580	2,374	3,555,844	413,767	7,758,990
Placer mining.....	99	21,419	22,095,669	363	347,448	.....	1,270,419
Nickel-copper mining and milling.....	2	6	38,691,594	1,412	1,867,217	105,570	3,794,244
Iron mining and briquetting <sup>2</sup> .....	3	3	109,583	33	17,301	2,007	23,110
Metallurgical works.....	5	6	61,691,928	5,104	8,568,997	5,280,674	429,304,384
<b>Total.....</b>	<b>323</b>	<b>1,659</b>	<b>290,534,965</b>	<b>20,664</b>	<b>32,732,782</b>	<b>8,721,063</b>	<b>105,700,838</b>
<b>NON-METALLIC—</b>							
Asbestos.....	14	19	38,133,046	2,582	2,997,107	923,239	8,988,360
Coal mining.....	450	511	145,006,440	25,032	33,200,309	4,069,634	49,261,951
Feldspar.....	23	25	712,329	240	165,766	11,141	235,789
Graphite.....	6	6	902,310	62	75,021	14,718	158,763
Natural abrasives.....	8	8	154,733	62	55,466	5,408	126,490
Gypsum.....	15	16	4,506,995	1,039	1,018,585	189,649	2,389,891
Mica.....	36	36	190,144	269	123,079	4,528	261,463
Natural gas.....	161	2,236	48,895,802	1,059	1,208,875	13,396	6,835,005
Oxides, iron.....	5	5	173,940	47	35,454	16,073	91,913
Petroleum.....	180	2,885	7,954,722	259	318,101	20,990	1,250,705
Quartz.....	14	15	1,005,159	153	145,494	20,495	363,612
Salt.....	12	13	2,563,508	402	467,487	315,368	1,410,697
Talc.....	7	7	744,037	92	74,519	22,218	205,835
All other non-metallic.....	28	28	2,080,481	218	149,655	58,437	273,327
<b>Total.....</b>	<b>959</b>	<b>5,810</b>	<b>253,023,646</b>	<b>31,560</b>	<b>40,032,918</b>	<b>5,685,294</b>	<b>71,851,801</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>							
Clay products.....	183	188	27,760,864	4,136	4,034,075	1,909,591	9,529,691
Cement.....	10	11	38,081,583	1,926	2,511,400	2,848,904	14,046,704
Lime.....	56	62	5,154,046	1,006	960,434	762,814	3,387,652
Sand and gravel.....	622	622	5,286,268	1,650	1,231,856	158,645	3,220,410
Stone.....	201	201	12,233,773	4,148	3,599,653	479,489	7,464,777
<b>Total.....</b>	<b>1,072</b>	<b>1,084</b>	<b>88,516,534</b>	<b>12,866</b>	<b>12,337,418</b>	<b>6,159,443</b>	<b>37,649,234</b>
<b>Summary by Classes—</b>							
<b>Metallic.....</b>	<b>323</b>	<b>1,659</b>	<b>290,534,965</b>	<b>20,664</b>	<b>32,732,782</b>	<b>8,721,063</b>	<b>105,700,838</b>
<b>Non-metallic.....</b>	<b>959</b>	<b>5,810</b>	<b>253,023,646</b>	<b>31,560</b>	<b>40,032,918</b>	<b>5,685,294</b>	<b>71,851,801</b>
<b>Structural materials and clay products.....</b>	<b>1,072</b>	<b>1,084</b>	<b>88,516,534</b>	<b>12,866</b>	<b>12,337,418</b>	<b>6,159,443</b>	<b>37,649,234</b>
<b>Total.....</b>	<b>2,354</b>	<b>8,553</b>	<b>632,075,145</b>	<b>65,090</b>	<b>85,103,118</b>	<b>20,565,800</b>	<b>215,201,873</b>

\*Net value here is gross value less freight and treatment charges.

<sup>1</sup>Doesnot include capital of Granby Co., Anyox, B.C.

<sup>2</sup>Does not include the number of placer mines in B.C.

<sup>3</sup>Includes 1 iron mine in Quebec, 1 molybdenum mine in Quebec and 1 cinnabar prospect in B.C.

<sup>4</sup>Value of shipments from metallurgical works less cost of ores, concentrates, matte, etc., treated, as this latter value was included in the credits to the mines and mills.

**Table 236.—Summary of Principal Statistics Relative to the Mineral Industry in Canada, by Provinces, 1925**

Province	Number of active operators	Number of operating plants or mines	Capital	Number of employees	Salaries and wages paid	Cost of fuel and electricity
			\$		\$	\$
Nova Scotia*.....	67	95	59,456,860	9,905	12,488,285	2,229,275
New Brunswick.....	36	85	3,070,322	1,113	1,003,169	114,629
Quebec.....	294	301	83,449,054	8,700	8,566,616	3,152,395
Ontario.....	1,208	5,896	258,967,755	19,346	25,909,951	8,463,276
Manitoba.....	26	26	4,948,621	699	711,735	315,005
Saskatchewan.....	70	70	3,732,909	652	647,014	91,025
Alberta.....	391	465	86,735,632	10,486	13,808,354	1,226,903
British Columbia.....	161	193	107,257,567	13,727	21,440,994	4,801,665
Yukon.....	101	1,422	24,456,425	462	527,090	171,627
<b>Canada.....</b>	<b>2,354</b>	<b>8,553</b>	<b>632,075,145</b>	<b>65,090</b>	<b>85,103,118</b>	<b>20,565,800</b>

\*Includes 1 firm operating in P.E.I.

**Table 237.—Fuel Used in the Mineral Industry in Canada, by Provinces, 1925**

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia and Yukon	Canada
Anthracite coal....Tons.....	10	11,620	3,349	180				16	15,175
\$.....	99	84,503	37,795	1,052				193	123,642
Bituminous coal....Tons.....	394,923	8,934	291,616	572,743	22,866	4,225	119,365	318,247	1,733,919
\$.....	1,415,968	44,056	1,763,968	3,456,041	182,132	33,667	455,082	1,366,125	8,717,039
Lignite coal.....Tons.....					309	24,526	141,325		166,151
\$.....					1,641	26,430	144,750		172,821
Coke.....Tons.....	10	5,055	164,532	63				102,847	272,507
\$.....	75	50,039	1,630,064	381				1,122,768	2,803,327
Gasoline.....Imp. gal.....	39,040	685	56,748	159,261	15	1,374	486	97,770	355,379
\$.....	11,139	254	17,477	45,176	5	406	208	58,412	133,077
Fuel oil.....Imp. gal.....	15,568	1,060	44,875	4,652,836	247,069		60	3,157,675	8,119,143
\$.....	2,672	209	5,357	450,566	25,112		42	297,840	781,798
Wood.....Cord.....	2,808	8,962	35,268	73,463	15,174	220	1,673	17,814	155,382
\$.....	12,636	37,038	175,703	388,144	73,080	1,290	6,728	73,685	768,304
Artificial and natural gas.....M cu. ft.....		2,735		98,902			521,548	257,077	880,262
\$.....		1,094		24,359			19,897	44,552	98,902
Other fuels.....\$.....			545	45,132				2,933	48,610
<b>Total.....\$.....</b>	<b>1,442,490</b>	<b>82,750</b>	<b>2,097,592</b>	<b>6,077,277</b>	<b>258,291</b>	<b>86,905</b>	<b>626,707</b>	<b>2,966,508</b>	<b>13,638,520</b>

**Table 238.—Fuel Used in the Mineral Industry in Canada, by Kinds and by Industries, 1925**

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Total value
	Tons	Tons	Tons	Tons	Gal.	M cu. ft.	Cords	\$	\$
<b>METALLIC MINERAL INDUSTRY—</b>									
Auriferous Quartz Mining and Milling—									
Quantity.....	950	23,262		461	897,732		11,666		
\$.....	17,324	236,287		6,757	99,088		62,525	208	422,189
Copper-Gold-Silver Mining—									
Quantity.....	6	6,834		128	439,889		10,943		
\$.....	90	63,132		1,342	36,558		51,190	49	152,361
Nickel-Copper Mining—									
Quantity.....	55	3,427		335	29,702		4		
\$.....	889	29,418		4,043	3,455		27		37,832
Silver-Cobalt Mining and Milling—									
Quantity.....	615	7,532		91	262,537		7,223		
\$.....	9,629	98,430		1,254	48,685		44,146	38,722	240,866
Silver-Lead-Zinc Mining and Milling—									
Quantity.....		17,062		608	219,779		6,344		
\$.....		121,448		5,369	109,730		40,332	40	276,919
Metallurgical Works—									
Quantity.....	149	127,919		257,506	6,008,791	245,257	5,347		
\$.....	2,406	788,894		2,664,241	517,818	41,426	33,769		4,048,554
<b>Total.....Quantity.....</b>	<b>1,775</b>	<b>186,036</b>		<b>259,129</b>	<b>7,858,430</b>	<b>245,257</b>	<b>41,527</b>		
<b>\$.....</b>	<b>30,338</b>	<b>1,337,609</b>		<b>2,683,006</b>	<b>815,334</b>	<b>41,426</b>	<b>231,989</b>	<b>39,019</b>	<b>5,178,721</b>

Table 238.—Fuel Used in the Mineral Industry in Canada, by Kinds and by Industries, 1925—Concluded

Industry	Anthra- cite coal	Bitum- inous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Total value
	Tons	Tons	Tons	Tons	Gals.	M cu. ft.	Cords	\$	\$
<b>NON-METALLIC MINERAL INDUSTRIES—</b>									
Asbestos—									
Quantity	10,751	34,993		4,267			50		
\$	78,072	256,945		41,897			150		377,064
Coal Mining—									
Quantity		687,587	159,843						
\$		2,353,496	145,182						2,498,678
Feldspar—									
Quantity		865			5,320		767		
\$		7,073			1,392		2,676		11,141
Graphite—									
Quantity		250			19,611		2,046		
\$		2,500			2,447		7,271		12,218
Natural Abrasives—									
Quantity		475			1,115		501		
\$		3,585			240		1,583		5,408
Gypsum—									
Quantity		16,179	262	673	45,685	4,032	672		
\$		108,466	1,312	6,166	12,028	1,874	1,944		131,790
Iron Oxides—									
Quantity	40	603			3,585		1,150		
\$	720	4,819			847		6,750		13,136
Mica—									
Quantity		112			350		572		
\$		915			100		3,513		4,528
Natural Gas—									
Quantity		4				27,298			
\$		25				11,222			11,247
Petroleum—									
Quantity		35				1,480	33		
\$		300				824	160		1,284
Quartz—									
Quantity		3,056			2,802		30		
\$		17,032			561		150		17,743
Salt—									
Quantity		57,081	1,665		6,200		40		
\$		278,067	10,359		1,288		200	6,315	296,229
Talc—									
Quantity		296			1,183		610		
\$		2,200			384		2,340		4,924
Miscellaneous Non-Met- allic Mineral Indus- tries—									
Quantity		3,871			242,810		868		
\$		29,136			24,828		1,724		55,688
<b>Total.....Quantity</b>	<b>10,791</b>	<b>805,407</b>	<b>161,770</b>	<b>4,940</b>	<b>328,661</b>	<b>32,810</b>	<b>7,339</b>		
<b>\$</b>	<b>78,792</b>	<b>3,064,559</b>	<b>156,853</b>	<b>48,063</b>	<b>44,115</b>	<b>13,920</b>	<b>28,461</b>	<b>6,315</b>	<b>3,441,078</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS INDUSTRIES—</b>									
Cement—									
Quantity		426,462			6,082				
\$		2,227,593			1,472				2,229,065
Clay Products—									
Quantity	66	203,346	3,843	2,691	151,250	546,458	44,256		
\$	951	1,372,147	13,863	21,546	19,844	27,779	235,295		1,691,425
Lime Burning—									
Quantity	1,582	63,654	38	5,622	1,688	55,737	59,180		
\$	7,173	393,827	329	48,756	493	6,777	257,309	3,276	717,940
Sand and Gravel—									
Quantity	80	22,058	500		43,433		372		
\$	580	125,617	1,776		9,736		1,550		139,259
Stone Quarrying—									
Quantity	881	25,956		125	84,978		2,708		
\$	5,808	195,687		1,956	23,881		13,700		241,032
<b>Total.....Quantity</b>	<b>2,609</b>	<b>741,476</b>	<b>4,381</b>	<b>8,438</b>	<b>287,431</b>	<b>602,195</b>	<b>106,516</b>		
<b>\$</b>	<b>14,512</b>	<b>4,314,871</b>	<b>15,968</b>	<b>72,258</b>	<b>55,426</b>	<b>34,556</b>	<b>597,854</b>	<b>3,276</b>	<b>5,018,721</b>
<b>Grand Total—</b>									
<b>Quantity</b>	<b>15,175</b>	<b>1,732,919</b>	<b>166,151</b>	<b>272,507</b>	<b>8,474,522</b>	<b>880,262</b>	<b>155,382</b>		
<b>\$</b>	<b>123,642</b>	<b>8,717,039</b>	<b>172,821</b>	<b>2,803,327</b>	<b>914,875</b>	<b>89,902</b>	<b>768,304</b>	<b>48,610</b>	<b>13,638,520</b>

Table 239.—Power Used in the Mineral Industry in Canada by Provinces, 1925

Province	Stationary engines			Hydraulic turbines	Electric motors		Boilers
	Steam	Gas	Oil		Operated by power generated by own establishment	Operated by purchased power	
Nova Scotia.....	No. 146		26	5	294	138	179
	H.P. 63,083		810	670	27,201	3,333	44,780
New Brunswick.....	No. 40	15	6		24	4	38
	H.P. 2,054	129	94		373	190	2,493
Quebec.....	No. 178		42	3	13	1,307	126
	H.P. 4,195		641	650	1,020	69,884	7,641
Ontario.....	No. 275	147	93	17	172	2,487	276
	H.P. 17,144	1,743	3,599	5,430	5,713	119,739	27,150
Manitoba.....	No. 15		4		17	130	14
	H.P. 575		15		250	7,145	905
Saskatchewan.....	No. 36		7		16	3	19
	H.P. 1,931		192		336	18	2,000
Alberta.....	No. 292	43	43		307	474	235
	H.P. 34,195	1,292	369		9,077	19,476	26,619
British Columbia.....	No. 173	4	45	70	847	1,013	144
	H.P. 32,225	135	2,236	42,689	42,043	76,237	17,475
Yukon.....	No. 1		6		17		3
	H.P. 100		368		250		190
Canada.....	No. 1,156	209	272	95	1,707	5,556	1,034
	H.P. 155,502	3,299	8,324	49,439	86,263	296,022	129,253

Table 240.—Cost of Electric Power Used in the Mineral Industry in Canada, by Industries and by Provinces, 1925

Industry	Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba and Saskatchewan	Alberta	British Columbia and Yukon	Canada
	\$	\$	\$	\$	\$	\$	\$
<b>METALLIC—</b>							
Auriferous Quartz.....			1,294,279			119,582	1,413,861
Silver-Cobalt-Nickel.....			258,008				258,008
Silver-Lead-Zinc.....		26,356	13,692			267,154	307,202
Copper-Gold.....		25,911				235,495	261,406
Placer Mining.....							
Nickel-Copper.....			67,738				67,738
Iron Mining and Briquetting.....		2,007					2,007
Metallurgical Works.....			205,632			1,026,488	1,232,120
<b>Total.....</b>		<b>54,274</b>	<b>1,839,349</b>			<b>1,648,719</b>	<b>3,542,342</b>
<b>NON-METALLIC—</b>							
Asbestos.....		546,175					546,175
Coal.....	793,817			4,120	506,919	266,100	1,570,956
Feldspar.....			2,500				2,500
Graphite.....							
Natural Abrasives.....							
Gypsum.....	16,413		31,942	9,504			57,859
Iron Oxides.....		2,937					2,937
Mica.....							
Quartz.....		1,000	1,752				2,752
Salt.....			19,139				19,139
Talc.....			17,294				17,294
Natural Gas.....			1,350		799		2,149
Petroleum.....			19,706				19,706
Other Non-Metallic.....		733	2,016				2,749
<b>Total.....</b>	<b>810,230</b>	<b>550,845</b>	<b>95,699</b>	<b>13,624</b>	<b>507,718</b>	<b>266,100</b>	<b>2,244,216</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>							
Cement.....		203,327	213,162	36,306	91,542	75,502	619,839
Clay Products.....	4,258	88,051	112,367	1,977	936	10,577	218,166
Lime.....	518	15,968	28,388				44,874
Sand and gravel.....		1,022	12,018	4,469		1,877	19,386
Stone.....	3,658	141,316	85,016	4,458		4,009	238,457
<b>Total.....</b>	<b>8,434</b>	<b>449,684</b>	<b>450,951</b>	<b>47,210</b>	<b>92,478</b>	<b>91,965</b>	<b>1,140,722</b>
<b>Grand Total.....</b>	<b>818,664</b>	<b>1,054,803</b>	<b>2,355,999</b>	<b>60,834</b>	<b>600,196</b>	<b>2,006,784</b>	<b>6,927,280</b>

Table 241.—Machinery Installed and Operated in the Mineral Industry in Canada, 1925

Industry	Boilers installed	Stationary engines, including those used for hoisting, pumping, etc.			Hydraulic turbines or water-wheels	Electric motors	
		Steam	Gas	Oil		Operated by power generated by establishment	Operated by purchased power
<b>METALLIC—</b>							
Auriferous Quartz.....	No. 60	21	4	25	16	96	658
	H.P. 4,265	1,570	226	2,666	7,541	3,271	37,583
Silver-Cobalt-Nickel.....	No. 31	14	1	2			208
	H.P. 1,785	630	160	400			7,707
Silver-Lead-Zinc.....	No. 19	22	3	20	24	36	81
	H.P. 1,095	1,770	75	911	3,469	890	5,851
Copper-Gold-Silver.....	No. 36	7		10	15	176	192
	H.P. 2,576	1,286		287	10,700	8,532	11,678
Placer Gold.....	No. .						
	H.P. .						
Nickel-Copper.....	No. .						152
	H.P. .						14,332
Molybdenum.....	No. .						12
	H.P. .						123
Metallurgical Works.....	No. 15	26			10	349	1,267
	H.P. 5,425	12,845			13,310	15,343	85,687
<b>Total.....</b>	<b>No. 161</b>	<b>90</b>	<b>8</b>	<b>57</b>	<b>65</b>	<b>657</b>	<b>2,570</b>
	<b>H.P. 15,146</b>	<b>18,101</b>	<b>461</b>	<b>4,264</b>	<b>35,020</b>	<b>28,036</b>	<b>162,961</b>
<b>NON-METALLIC—</b>							
Asbestos.....	No. 17	2		1		4	402
	H.P. 1,720	750		6		500	28,121
Coal.....	No. 458	539	24	40	2	760	468
	H.P. 79,552	113,283	106	361	12,000	47,972	17,306
Feldspar.....	No. 10	9		4			
	H.P. 327	360		67			
Graphite.....	No. 3	4		1	3	10	
	H.P. 260	260		20	300	399	
Gypsum.....	No. 13	25		18		26	52
	H.P. 1,315	1,638		677		453	2,439
Natural abrasives.....	No. 6	7		3			
	H.P. 275	255		46			
Mica.....	No. 4	3			1	5	2
	H.P. 230	132			200	120	4
Natural Gas.....	No. 18	13	129	9		16	9
	H.P. 942	424	1,066	18		227	43
Oxides, Iron.....	No. .			2			
	H.P. .			60			117
Petroleum.....	No. 17	13	28	2			50
	H.P. 880	218	1,106	12			467
Quartz.....	No. 5	12				6	8
	H.P. 750	613				120	413
Salt.....	No. 25	30				2	48
	H.P. 3,950	717		71		52	658
Talc.....	No. 3	7		5		4	9
	H.P. 180	84		69		225	320
Other Non-Metallic.....	No. 6	3		6		3	30
	H.P. 267	130		49		67	1,303
<b>Total.....</b>	<b>No. 585</b>	<b>667</b>	<b>181</b>	<b>95</b>	<b>6</b>	<b>836</b>	<b>1,082</b>
	<b>H.P. 90,648</b>	<b>118,864</b>	<b>2,278</b>	<b>1,456</b>	<b>12,500</b>	<b>50,135</b>	<b>51,191</b>
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS—</b>							
Cement.....	No. 16	4	4	9	6	129	838
	H.P. 2,577	2,386	120	214	700	5,536	47,107
Clay Products.....	No. 119	94	14	15	1	27	313
	H.P. 9,831	7,402	416	388	150	942	12,930
Lime.....	No. 23	22	2	5	1	23	126
	H.P. 1,338	1,052	24	48	30	264	2,449
Sand and Gravel.....	No. 46	62		39	5	7	67
	H.P. 5,252	3,920		865	239	485	1,383
Stone.....	No. 84	217		52	11	28	560
	H.P. 4,461	3,777		1,089	800	865	18,001
<b>Total.....</b>	<b>No. 288</b>	<b>399</b>	<b>20</b>	<b>120</b>	<b>24</b>	<b>214</b>	<b>1,904</b>
	<b>H.P. 23,459</b>	<b>18,537</b>	<b>560</b>	<b>2,604</b>	<b>1,919</b>	<b>8,092</b>	<b>81,870</b>
<b>Grand Total.....</b>	<b>No. 1,034</b>	<b>1,156</b>	<b>209</b>	<b>272</b>	<b>95</b>	<b>1,707</b>	<b>5,556</b>
	<b>H.P. 129,253</b>	<b>155,502</b>	<b>3,299</b>	<b>8,324</b>	<b>49,439</b>	<b>86,263</b>	<b>296,022</b>

## UNITED STATES TARIFF RATES ON MINERAL PRODUCTS IMPORTED

Since Canadian producers of mineral products market a large part of their annual output in the United States it was thought it might be of value to readers of this report to have at hand a guide to United States Tariff and the following tables were therefore compiled. These have been checked by the Customs Division of the United States Treasury Department at Washington, D.C., U.S.A.

Table 242.—United States Tariff

Item Number	Material	Duty
<b>(a) On Metals and Manufactures of</b>		
1508	Antimony ore.....	Free
1547	Chromite—Chromite or chrome ore.....	Free
1550	Cobalt metal and ore.....	Free
29	Cobalt linoleate.....	10c. per lb.
29	Cobalt, oxide of.....	20c. per lb.
29	Cobalt salts and compounds (all other).....	30% ad val.
29	Cobalt sulphate.....	10c. per lb.
1457	Cobalt ore waste.....	10% ad val.
1556	Copper ore, regulus of, and black or coarse copper, and cement copper, old copper, fit only for remanufacture, copper scale, clippings from new copper, and copper in plates, bars, ingots, or pigs not manufactured or specially provided for.....	Free.
1557	Copper sulphate or blue vitriol, copper acetate and subacetate.....	Free.
381	Copper in rolls, rods or sheets.....	2½c. per lb.
	Engravers plates, not ground and seamless copper tubes and tubing.....	7c. per lb.
	Engravers plates, ground, and brazed copper tubes.....	11c. per lb.
	Brass rods, sheet brass, brass plates, bars, and strips, Muntz or yellow metal sheets, metal sheathing, bolts, piston rods and shafting.....	4c. per lb.
	Seamless brass tubes.....	8c. per lb.
	Brazed brass tubes, angles and channels.....	12c. per lb.
	Bronze rods and sheets.....	4c. per lb.
	Bronze tubes.....	8c. per lb.
1539	Bullion gold or silver.....	Free.
1634	Gold ores and sweepings.....	Free.
1597	Iron ore including mangiferous iron ore and residuum from burnt pyrites.....	Free.
1677	Sulphur in any form, and sulphur ore, and spent oxide of iron containing more than 25 per centum of sulphur.....	Free.
392	Lead bearing ores and mattes—duty applied on lead contents, such duty shall not be applied to the lead contained in copper mattes unless actually recovered.....	1½c. per lb.
393	Lead bullion or base bullion, lead in pigs and bars, dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, type metal, Babbitt, solder and all other combinations not specially provided for, duty to apply on lead contents.....	2½c. per lb.
	Lead in sheets, pipe, shot, glazier's lead and lead wire.....	2½c. per lb.
47	Lead, linoleate of.....	30% ad val.
74	Lead litharge.....	2½c. per lb.
302	Manganese ore or concentrates containing in excess of 30 per centum of metallic manganese.....	1c. per lb. on metallic manganese content.
302	Molybdenum ore or concentrates.....	35c. per lb. on metallic molybdenum content.
302	Tungsten ore or concentrates.....	45c. per lb. on metallic tungsten content.
1634	Nickel mattes and ores of nickel.....	Free.
300	Nickel oxide.....	1c. per lb.
390	Nickel and nickel alloys in pigs, ingots, shot, cubes and similar forms.....	3c. per lb.
390	Nickel in bars, rods, sheets, strips, tubing, etc.....	25% ad val.
390	In addition thereto on the foregoing if cold rolled, drawn or worked.....	10% ad val.
1596	Platinum, palladium and other metals of the platinum group.....	Free.
394	Zinc-bearing ore of all kinds containing less than 10 per centum of zinc.....	Free.
	Containing more than 10 per centum of zinc and less than 20 per centum.....	½c. per lb. on metallic zinc content.
	Containing more than 20 per centum of zinc and less than 25 per centum.....	1c. per lb. on metallic zinc content.
	Containing 25 per centum of zinc or over.....	1½c. per lb. on metallic zinc content.
395	Zinc in blocks, pigs or slabs and zinc dust.....	1½c. per lb.
395	Zinc in sheets.....	2c. per lb.
395	Zinc scrap for re-manufacturing.....	1½c. per lb.
<b>(b) On Non-Metallic Minerals</b>		
1619	Actinolite—crude, classified as "minerals, crude, not specially provided for".....	Free.
214	Actinolite—ground, classified as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
1513	Arsenic—white or arsenious acid.....	Free.
1512	Arsenic—Sulphide of.....	Free.
379	Arsenic—Metallic.....	6c. per lb.
1515	Asbestos—crudes, fibres, sand.....	Free.
1401	Asbestos—yarn.....	30% ad val.
69	Barytes—ore, crude.....	\$4 per ton
69	Barytes—ore, ground.....	\$7.50 per ton.
	Calcite—not mentioned by this name in the tariff. Chalk, crude, is free (Item 1545) and chalk, ground, is dutiable at 25% ad valorem (Item 20).	
1570	Corundum—ore.....	Free.

Table 242.—United States Tariff—Concluded

Item Number	Material	Duty
<b>(b) On Non-Metallic Minerals—Concluded</b>		
1415	Corundum—ground.....	1c. per lb.
1619	Feldspar—crude, classified as "minerals, crude not specially provided for".....	Free
214	Feldspar—ground, dutiable as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
207	Fluor spar.....	\$5.60 per ton
213	Graphite or plumbago—crude or refined—amorphous.....	10% ad val.
213	Graphite or plumbago—crude or refined—crystalline lump, chip or dust.....	20% ad val.
213	Graphite or plumbago—crude or refined—crystalline flake.....	1½c. per lb.
236	Grindstones—finished or unfinished.....	\$1.75 per ton
1643	Gypsum—crude.....	Free
205	Gypsum—ground.....	\$1.40 per ton
75	Iron oxides—ochers, crude.....	1c. per lb.
75	Iron oxides—ochers, washed or ground.....	1c. per lb.
75	Iron oxides—"iron-oxide pigments not specially provided for".....	20% ad val.
204	Magnesite—crude.....	5/16c. per lb.
204	Magnesite—caustic calcined.....	5/8c. per lb.
204	Magnesite—dead burned and grain.....	23/40c. per lb.
50	Magnesium sulphate—(Epsom salts).....	1c. per lb.
208	Mica—unmanufactured, valued at not above 15 cents per pound.....	4c. per lb.
208	Mica—unmanufactured, valued above 15 cents per pound.....	25% ad val.
208	Mica—cut or trimmed, and mica splittings.....	30% ad val.
208	Mica—ground.....	20% ad val.
808	Mineral waters.....	10c. per gal.
1640	Phosphate—"phosphates, crude".....	Free
1677	Pyrite—"sulphur ore, such as pyrites or sulphuret of iron in its natural state, and spent oxide of iron, containing more than 25% of sulphur".....	Free
83	Salt—in bags, sacks, barrels, or other packages.....	11c. per cwt.
83	Salt—in bulk.....	7c. per cwt.
83	Sodium sulphate—crystallized or Glauber's salt.....	\$1.00 per ton
1667	Sodium sulphate, crude or salt cake.....	Free
207	Silica—crude, not specially provided for.....	\$4 per ton
207	Silica—for use as pigment, not specially provided for.....	\$7.50 per ton
209	Talc—crude.....	1c. per lb.
209	Talc—ground, washed, powdered, or pulverized (except toilet preparations).....	25% ad val.
1675	Tripoli—crude or manufactured, not specially provided for.....	Free
<b>(c) On Structural Materials and Clay Products</b>		
Clay Products—		
201	Brick—bath, chrome and fire, n.s.p.f.....	25% ad val.
	Magnesite brick.....	1c. per lb. and 10% ad val.
1536	Brick—not specially provided for.....	*Free
207	China clay or Kaolin.....	\$2.50 per ton
207	Clays or earths, unwrought or unmanufactured, including common blue clay and Gross-Almerode glass pot clay, n.s.p.f.....	\$1.00 per ton
207	Clays or earths, wrought or manufactured, n.s.p.f.....	\$2.00 per ton
210	Earthenware—common yellow, brown or gray made of natural, unwashed, and unmixed clay, plain or embossed; common salt-glazed stoneware; stoneware and earthenware crucibles; all the foregoing not ornamented, incised, or decorated in any manner.....	15% ad val.
210	Earthenware—ornamented, incised, or decorated in any manner and manufactures wholly or in chief value of such ware, n.s.p.f.....	20% ad val.
210	Earthenware—Rockingham.....	25% ad val.
203	Lime—not specially provided for, including weight of container.....	10c. per cwt.
203	Lime—hydrated, including weight of container.....	12c. per cwt.
237	Slates—slate chimney pieces, mantles, slabs for tables, roofing slates, and all other manufactures of slate, n.s.p.f.....	15% ad val.
Stone—		
203	Limestone—(not suitable for use as monumental or building stone) crude, or crushed but not pulverized.....	5c. per cwt.
235	Limestone, freestone, granite, sandstone, lava and all other stone suitable for use as monumental or building stone, except marble, breccia, and onyx, n.s.p.f., hewn, dressed, or polished, or otherwise manufactured.....	50% ad val.
235	Unmanufactured, or not dressed, hewn or polished.....	15c. per cubic ft.
232	Marble, breccia and onyx, in block, rough or squared only.....	65c. per cubic ft.
232	Marble, breccia and onyx, sawed or dressed, over two inches in thickness.....	\$1.00 per cubic ft.
232	Marble, breccia and onyx slabs and paving tiles, containing not less than four superficial inches, if not more than one inch in thickness.....	8c. per superficial foot.
	If more than one inch and not more than one and one-half inches in thickness.....	10c. per superficial foot.
	If more than one and one-half inches and not more than two inches in thickness.....	13c. per superficial foot.
	If rubbed in whole or in part.....	3c. per superficial foot in addition.
	Mosaic cubes of marble, breccia, or onyx, not exceeding two cubic inches in size, if loose.....	One-fourth of one cent per lb. and 20% ad val.
	If attached to paper or other material.....	5c. per superficial foot and 35% ad val.
1675	Stone and sand: burrstone in blocks, rough or unmanufactured; quartzite; traprock; rottenstones; tripoli and sand, crude or manufactured; cliff stone; freestone; granite and sandstones; unmanufactured, and not suitable for use as monumental or building stone; all of the foregoing not specially provided for.....	Free

\*Except on imports from countries which impose a duty on similar products imported from U.S. On imports of these commodities a corresponding duty is levied.

**METALLIC MINERAL INDUSTRIES**  
**THE GOLD INDUSTRY IN CANADA—1925**

1. General Review:
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  - (a) Ontario.
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**1. General Review**

(a) **Definition of the Industry.**—Canada's gold mining industry falls naturally into two main divisions: the winning of placer gold, or the "Alluvial Gold Mining Industry", and the recovery of free-milling gold from auriferous quartz mines, described under the title "The Auriferous Quartz Mining Industry." In the treatment of ores containing metals other than gold in commercial values, such as copper and silver, gold is often recovered as a by-product; in making up production figures, this gold obtained from the treatment of Canadian ores of every kind, is included in the total. Descriptions of these other industries, which do not obtain gold as their main product, are given in other sections of this report. In particular, the one entitled "Copper-Gold-Silver Mining Industry" may be mentioned, as most of the other lode mines producing gold in quantity are included in this group.

(b) **Historical.**—During the early history of the industry in Canada, most of the gold produced was obtained from placer deposits in the province of British Columbia. Later, in 1898, the famous Yukon placers were discovered, and for some time these deposits constituted the principal source of Canada's gold. Recent developments in lode mining, however, have somewhat overshadowed the placer workings; as the placer yields declined, lode gold recovered increased until now this constitutes the principal source of supply. During the past ten or eleven years the province of Ontario has come to the front as a gold-producer, through the development of the rich gold quartz mines of the Porcupine and Kirkland Lake districts; the output from British Columbia mines has been improving for several years; new fields, particularly in the Rouyn area in Quebec, are being watched closely as the next gold-producing district.

(c) **Sources.**—In 1925, the auriferous quartz mines yielded 85 per cent of the total production; alluvial deposits provided 4 per cent; Canadian copper and lead smelters recovered 2 per cent; and gold obtained by foreign smelters in the treatment of Canadian ores of various kinds, amounted to 9 per cent of the total Dominion production of gold.

(d) **Importance of the Industry.**—Among Canada's mineral products, gold holds second place in point of value, being surpassed only by coal. In 1925, gold represented 15.8 per cent of the total value of Canada's mineral output.

Steady progress, too, has been made by Canada as a world producer, and for the past four years, Canada has held third place; the Union of South Africa and the United States continue to hold first and second places, respectively. South Africa production provides more than half the world's output while Canada produces more than three-fifths as much as the United States and more than twice as much as Australia or South America and one and one-half times as much as the continent of Asia.

## 2. Reviews of the Gold Mining Industry by Areas

(a) **Ontario.**—Ontario with its rich mines in the Porcupine and Kirkland Lake areas continues to hold the lead among the gold-producing provinces, contributing 84.2 per cent of the total gold production for Canada in 1925. In the same year Ontario's gold output represented 34.3 per cent of the aggregate value of the mineral production for the province.

Some idea of the phenomenal growth in gold mining in Ontario may be had from the facts that in 1903 the gold output of the province totalled only 9,096 ounces, or 1 per cent of the Canadian aggregate for this metal; in 1913, the output of 219,801 ounces was 27.4 per cent of Canada's total production; while in 1925, as already noted, Ontario's share at 1,461,039 ounces, represented 84.2 per cent of the total for the Dominion.

In 1925, there were in the Porcupine area 6 producing mines of importance, headed by the Hollinger, now one of the world's greatest mines. The others in order of their production values were: Dome, McIntyre, Vipond, Night Hawk Peninsular, and Consolidated West Dome Lake. Gold production from the Porcupine area amounted to 1,196,199 fine ounces or four-fifths of the total for the province. To the end of 1925, the aggregate yield of gold from the Porcupine area reached a value of more than \$160,000,000.

Kirkland Lake, Ontario's second most important gold-producing area, discovered in 1911 and more actively developed since 1919, yielded 260,552 fine ounces in 1925. Wright-Hargreaves and Lake Shore are the two principal producers; others of importance in this camp are: Teck Hughes, Tough Oakes Burnside and Argonaut, and the Barry Hollinger of the Boston Creek camp, in addition to which there are many smaller properties being developed.

The immediate outlook is for further increase in the production of gold. Mines at present producing are steadily increasing the capacity of their mills, enlarging the operations of their mines and acquiring additional property. Hydro-electric power plants have been increased and the supply is now sufficient for enlarged operations.

Several deposits within the area of the Porcupine and Kirkland Lake camps, although not producing, are being vigorously developed and may be expected to add to the general output. Discoveries of gold ores, made from time to time in many parts of this province, also add greatly to the probability of increased production.

Late in 1925 some apparently important discoveries of gold were made following some earlier efforts, near Red Lake in the District of Patricia, Ontario. This place is near the Manitoba boundary line more than 100 miles north of the National Transcontinental Railway line and a somewhat less distance east of Bull Dog Lake in Manitoba. Several leading gold mining companies have become seriously interested in the district and thorough exploration is in progress. Attention had already been called to the locality by the Geological Survey over thirty years ago and more recently by the Ontario Bureau of Mines. Geologically, the area is a Precambrian complex. Keewatin lavas and later sediments (conglomerate and slate) are intruded by granite and porphyry. Quartz veins occur, and lavas in contact with quartz porphyry intrusions are characteristically altered. Owing to the keen interest this field has aroused, its merits should soon become definitely known.

The knowledge and experience gained in the successful development of gold mining in Ontario during the past thirteen or fourteen years is now leading to re-examination of many localities that were unsuccessfully opened at earlier times, especially those along the main line of the Canadian Pacific Railway north of the Great Lakes and in the district of the Lake of the Woods. The Goudreau and Michipicoten areas are among those which are receiving renewed attention. Well-known mining companies are engaged in exploration and development work and results so far obtained are reported as promising.

The producing gold deposits of Ontario occur under somewhat uniform conditions but with local variations. All are in rock of Precambrian age and the principal producing deposits are associated with acid intrusives of Algonian age in volcanic or sedimentary rocks of earlier age.

(b) **British Columbia.**—British Columbia, holding second place among the gold-producing provinces, contributes about 13 per cent of the Dominion total for this metal, but most of this yield is obtained from the smelting of ores in which other metals predominate. In

the early days, placer production from the Cassiar and Cariboo districts was of greater importance than it has been in recent years. From 1858 to 1892 yields from the placer deposits of British Columbia made up the entire production of gold from the province; in 1895 the recovery of gold lode deposits was greater than from the placers. In 1925 placer gold production represented only 6 per cent of the total; gold from milling ores made up 9 per cent; gold obtained in the smelting of gold-bearing ores, treated primarily for other metals, constituted 19 per cent; and gold in similar ores exported for treatment made up the balance or 66 per cent.

In lode mining the Portland Canal division furnishes a large production of gold. In 1925 it gave more than 56 per cent of the gold output of the province. This district includes the Premier mine. Trail (Rossland), Skeena, Boundary-Yale, Nass River and Coast divisions follow in importance. The deposits of Portland Canal, Trail, Skeena and Nass are complex ores, which are important for their content of silver or base metals as well as for gold.

The gold lodes of British Columbia are either in or associated with igneous rock, especially where these invade rocks of earlier age. Such conditions obtain over vast areas along the border of the Coast range and also in other parts of the province. Since the main geological features are on a large scale and the province is but sparsely inhabited, it follows that many such zones of contact that are favourable for the occurrence of minerals of value, are still little known in detail over great distances. Consequently the province offers a field for prospecting that is of great magnitude and promise and increased production may be looked for with confidence.

(c) **Yukon.**—Still holding third place among Canada's gold producing geographical divisions, Yukon Territory produced 47,817 ounces of fine gold in 1925 from placer gold recoveries. Following the discovery of placer gold in the Yukon in 1896, there was a great rush to this new field and the placer gold output from the Territory increased enormously in the next few years, reaching a maximum in 1900 when the yield totalled more than a million ounces of fine gold. For a few years, production continued on a large scale but by 1908 the annual output had dropped to about 174,000 fine ounces. Lode mining was undertaken in a small way about 1910, but production from this source never reached very great proportions. During the years 1909 to 1913 there was once more a steady upward trend due to increased placer workings. In the following year a recession set in, and the output has shown a continual shrinkage year by year, from 1914 until 1925, when there was again a slight upward turn to production; the output amounted to 47,817 fine ounces as compared with a total of 34,825 fine ounces for 1924. In 1925, there were 5 companies and approximately 93 individual operators working placer deposits in the Yukon. During the year, work was done on 120 miles of ditches and the quantity of material handled was estimated at 2,721,992 cubic yards. In crude placer gold, about 80 per cent of the weight is fine gold, 18 per cent silver, and 2 per cent base metal or material of no value.

(d) **Prairie Provinces.**—Manitoba, Saskatchewan and Alberta.—The major part of the settled portions of the prairie provinces, Alberta, Saskatchewan and Manitoba, is underlain by rocks of sedimentary origin and of comparatively late age. It is, therefore, not likely to contain deposits of the precious metals. Alluvial gold is found in the Saskatchewan river in Alberta, but its recovery has not been found profitable.

The northeastern part of each of these provinces, however, occupies a portion of the Laurentian plateau which is underlain by rocks of Precambrian age and in many places is favourable for the occurrence of gold or other valuable minerals.

In Alberta the Precambrian area is small, about 5,000 square miles, and as yet no gold occurrences have been reported from it. In Saskatchewan, it occupies about one-third of the province and in Manitoba it is still larger, comprising perhaps two-thirds of that province.

Near the margin of the Precambrian, adjacent to the Manitoba-Saskatchewan boundary, is an area known as The Pas district, in which gold, along with copper and pyrites, is found over a wide area, in bodies, some of which are large. A small amount of gold was recovered from some rich copper ores that were mined for a time at the Mandy mine in

this district. Free milling gold was also mined for a time at the Rex mine, in the Herb or Wekusko lake district, eighty miles northeast of The Pas.

Other deposits of both classes of ore are found in the region and have received more or less development. Enormous deposits of copper-bearing pyrites at Flin Flon, one hundred miles north of The Pas also have an appreciable gold content. This property has lately changed hands and is under investigation by the new owners with a view to operation.

In Manitoba, east of Lake Winnipeg, prospecting has been carried on for as long as ten years. Numerous occurrences of free gold have more or less developed in the vicinity of Rice, Gold, and Long Lakes, and more recently at Bull Dog Lake, near the Ontario boundary line. Intensive work was carried on in the Long and Bull Dog lake areas throughout 1925 by strong mining companies of successful experience; the outlook is hopeful for an important mining camp.

Geological conditions are broadly similar to those of other parts of the Precambrian complex in which gold is found.

(e) **Quebec.**—So far, Quebec has not been a great producer of gold or gold-bearing ores, but recent work in the Rouyn field indicates that in the near future, this province will become of much more importance as a producer of metals, including gold, than it has ever been in the past. In reviewing the situation in Quebec, the fact that the ores of the Rouyn area are largely copper-gold, with some containing zinc as well, makes it necessary to consider the problem in connection with the production in other provinces from similar ores; this is done in the section on the "Copper-Gold-Silver Industry," which should be read in conjunction with this review.

Suffice it to say, here, that the gold production from Quebec ores, to date, has been recovered from gold-bearing pyritic ores sold primarily as a source of sulphur for acid manufacture, and from lead ores, usually exported for treatment,

(f) **Nova Scotia.**—Gold, obtained mostly from free-milling ores, and partly from gold-bearing ores containing arsenic, continued to be one of Nova Scotia's important items of mineral production from about 1862 until 1903 and during these years many deposits were worked, the annual yields varying from 6,863 fine ounces in 1862 to 30,348 fine ounces in 1902, with an average production of possibly 20,000 ounces each year. In 1904, production dropped to 10,362 ounces, and the output held around this figure until 1910; since then there has been no appreciable revival in production and in 1925 the total output was only 1,626 ounces.

Nova Scotia possesses a large number of small gold lodes in quartzites and slates of Precambrian age. In places these yield very rich ore. They have been worked irregularly during the past sixty years and have made a total production little short of \$19,000,000.

Several of these mines have been recently re-opened. There is renewed interest in the region and further activity may be expected. Hydro-electric power is now available in most parts of the province.

### 3. The Alluvial Gold Mining Industry

It is very difficult to secure complete information on placer mining in Canada, since placer fields are mostly remote and except in a few cases, are operated by small numbers of men of no fixed abode. Dredging companies and hydraulicking companies send annual returns to the Bureau and with the aid of the *Mining Lands Branch* of the Department of the Interior, some definite information is thus obtainable regarding the Yukon territory.

Statistics on the production of placer gold in British Columbia are obtained from the reports of the resident mining engineers in each of the mining districts who are in close touch with the mining operations in their districts; this figure for placer gold is believed to be approximately correct. In 1925, the output was reported as 16,476 crude ounces. Analyses show that placer gold contains, on the average about 80 per cent gold, 18 per cent silver, and 2 per cent base metal, so that the fine gold in the output amounted to 13,181 fine ounces worth \$272,475 when valued at the standing rate (\$20.671,834) for an ounce of fine gold. One dredging company operating in the Cariboo district employed 25 men and paid \$39,876 in wages, for the recovery of 5,533 ounces of crude gold from 381,900 cubic

yards of material. The remaining placer production of British Columbia came from the work of individuals operating in the Atlin, Liard, Stikine, Cariboo, Quesnel, Ominica, Peace River and other smaller districts.

During 1925 in the Yukon, 5 companies recovered 45,156 crude ounces or about 75 per cent of the total quantity won, and employed 245 workers to whom wages amounting to \$307,572 were paid. The total amount of earth handled by these operators was 2,721,992 cubic yards in the working of some 120 miles of ditches. There were also 93 prospectors or individual lessees who carried on work during the season, accounting for approximately 15,000 crude ounces of gold.

**Table 243.—Summary Statistics of Placer Mining in the Yukon Territory, 1924 and 1925**

Item	1924	*1925
Time in operation.....months	6-8	6-8
Number of wage-earners.....	234	363
Wages paid.....	\$389,079	\$347,448
Crude ounces gold recovered.....	37,946	76,250
Value of gold and silver.....	\$617,263	\$1,270,419
Quicksilver purchased.....lb.		
Quantity of material handled.....cubic yards	2,888,918	3,103,892
Length of ditches.....miles	122	120

\*1925 figures include one large operator in British Columbia and the quantity and value of placer gold produced in British Columbia.

**Table 244.—Location of Principal Operators in the Yukon Territory and British Columbia, 1925**

Name of company	Claim operated
<b>YUKON—</b>	
New North West Corporation.....	900 placer claims.
Burrall and Baird, Ltd.....	78 placer claims, 3 leases.
Yukon Gold Company.....	340 placer claims, 3 leases.
A. E. Weinberg.....	Miller Creek Concession.
North American Transportation and Trading Co.....	Dominion Creek.
45 prospectors.....	Bonanza Creek.
11 prospectors.....	Thistle Creek.
11 prospectors.....	Kirkman Creek.
26 prospectors.....	Dominion and Sulphur Creek.
<b>BRITISH COLUMBIA—</b>	
Kafue Copper Development Co.....	Antler Creek and Cunningham Pass.
No record of small operators.	

#### 4. The Auriferous Quartz Mining Industry

In 1925 there were 52 auriferous quartz mines operating in Canada, and of these 27 produced bullion or shipped ores while 25 carried on development work only. There were 36 mines operating in Ontario, 11 in British Columbia, 4 in Nova Scotia and one in Manitoba. The corresponding data for 1924 were: Ontario, 41; British Columbia, 11; Nova Scotia, 6; Manitoba, 2; and Quebec, 10. (All the properties mentioned as gold properties operating in the province of Quebec during 1924 were re-classified as belonging to the copper-gold-silver group in 1925.) Ontario mines produced over 90 per cent of the total gold recovered from the auriferous quartz mines of Canada.

In 1925, the ore mined totalled 3,646,460 tons of which 3,527,021 tons were put through the mills and 3,458,451 tons were cyanided. About 181,515 crude ounces were recovered by amalgamation and 1,713,903 crude ounces, by cyanidation. Shipments of bullion having a total net value of \$30,742,475 amounted to 1,895,047 crude ounces containing 1,482,294 fine ounces of gold and 254,514 fine ounces of silver. Ores and residues and high-grade slags shipped to smelters were valued at \$4,292,886.

The total capital employed in this industry in Canada in 1925 amounted to \$84,964,062 as against \$83,982,765 in the previous year. Of this total approximately 74.5 million dollars was invested in Ontario and about 10 million dollars in British Columbia. There was also a small amount reported as invested in gold mines in Nova Scotia and Manitoba.

Salaries and wages paid in 1925 amounted to 11.9 million dollars as against 10.5 million dollars in 1924. Employees in operating mines numbered 7,052 of whom 445 were on salary, 1,871 were wage-earners working on surface, 4,146 worked underground and 590 were employed in the concentrators. Of this total number employed, 6,248 were in Ontario gold mines, 702 in British Columbia, 49 in Nova Scotia and 53 in Manitoba.

Gold production in 1925 was the greatest of any year on record, and with the increase in milling capacity, the development of prospects into mines, improved mechanical equipment and the advance in metallurgical knowledge and practice, there is little doubt that Canada's gold output will continue to show steady growth.

**Table 245.—Principal Statistics of the Auriferous Quartz Mining Industry in Canada, 1921-1925**

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net value of bullion ore, concentrates or residues shipped from the mines
			\$		\$	\$	\$	\$
1921.....	57	59	48,043,363	3,889	6,072,318	5,474,607	455,015	16,689,784
1922.....	79	79	35,368,094	5,441	8,011,682	7,383,516	353,453	26,082,169
1923.....	65	65	77,574,976	5,524	8,961,434	5,661,661	1,497,197	25,021,837
1924.....	70	70	83,982,765	6,738	10,500,140	6,925,027	1,559,406	31,298,107
1925.....	52	52	84,964,062	7,052	11,931,948	(†)	1,836,050	35,035,361

\*For 1921 and 1922 cost of electricity is included with miscellaneous expenses.

†For 1925 data not available.

**Table 246.—Capital Employed by Provinces in the Auriferous Quartz Mining Industry in Canada, 1924 and 1925**

—	Nova Scotia		Quebec		Ontario		Manitoba		British Columbia		Canada	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1924												
Producing.....	3	70,000	.....	.....	15	53,833,245	1	124,069	9	10,336,029	28	64,363,343
Operating but not producing.....	3	46,293	10	1,335,748	26	14,860,973	1	3,294,296	2	82,112	42	19,619,422
<b>Total.....</b>	<b>6</b>	<b>116,293</b>	<b>10</b>	<b>1,335,748</b>	<b>41</b>	<b>68,694,218</b>	<b>2</b>	<b>3,418,365</b>	<b>11</b>	<b>10,418,141</b>	<b>70</b>	<b>83,982,765</b>
1925												
Producing.....	4	99,150	.....	.....	13	58,757,165	1	124,069	9	10,283,075	27	69,263,459
Operating but not producing.....	.....	.....	.....	.....	23	15,646,769	.....	.....	2	53,834	25	15,700,603
<b>Total.....</b>	<b>4</b>	<b>99,150</b>	.....	.....	<b>36</b>	<b>74,403,934</b>	<b>1</b>	<b>124,069</b>	<b>11</b>	<b>10,336,909</b>	<b>52</b>	<b>84,964,062</b>

**Table 247.—Employees, Salaries and Wages Paid in the Auriferous Quartz Mining Industry in Canada by Provinces, 1924 and 1925**

Province	1924					Salaries and wages	1925					Salaries and wages
	Number of employees				Number of employees							
	On sal- ary	Wage-earners			Total em- ployees		On sal- ary	Wage-earners			Total em- ployees	
		Sur- face	Under- ground	Mill				Sur- face	Under- ground	Mill		
						\$						\$
Nova Scotia.....	6	31	21	2	60	32,660	2	23	20	4	49	24,809
Quebec.....	27	179	52		258	334,728						
Ontario.....	360	1,574	3,381	470	5,785	9,040,272	368	1,536	3,845	499	6,248	10,634,273
Manitoba.....	11	57	20	5	93	136,605	3	23	22	5	53	57,138
British Columbia.....	55	209	208	70	542	955,875	72	289	259	82	702	1,215,728
Canada.....	459	2,050	3,682	547	6,738	10,500,140	445	1,871	4,146	590	7,052	11,931,948

Table 248.—Number of Wage-Earners in the Auriferous Quartz Mining Industry in Canada by Months, 1924 and 1925

Month	1924				1925			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Under-ground			Surface	Under-ground		
January.....	1,610	3,425	524	5,559	1,624	3,766	544	5,934
February.....	1,845	3,466	518	5,829	1,536	3,831	549	5,916
March.....	1,829	3,487	499	5,815	1,560	3,963	562	6,085
April.....	1,915	3,438	522	5,875	1,652	4,008	556	6,216
May.....	1,975	3,515	528	6,018	1,708	4,050	577	6,335
June.....	2,100	3,522	522	6,144	1,785	4,200	589	6,574
July.....	2,057	3,676	510	6,243	1,826	4,195	570	6,591
August.....	2,170	3,728	527	6,425	1,792	4,139	567	6,498
September.....	2,218	3,742	525	6,485	1,800	4,087	581	6,468
October.....	2,195	3,819	548	6,562	1,844	4,231	598	6,673
November.....	2,048	3,741	563	6,352	1,704	4,221	616	6,541
December.....	1,834	3,626	547	6,007	1,635	4,117	588	6,340
<b>Average.....</b>	<b>2,050</b>	<b>3,682</b>	<b>547</b>	<b>6,279</b>	<b>1,871</b>	<b>4,146</b>	<b>590</b>	<b>6,607</b>

Table 249.—Ores Mined and Milled, Crude Bullion Produced and Shipped from the Gold Mines in Canada, by Provinces, 1924 and 1925

	Nova Scotia	Ontario	Manitoba	British Columbia	Canada
<b>1924</b>					
Number of producing mines.....	3	15	1	9	28
Ore mined..... tons		2,884,519	2,669	209,102	3,096,290
Ore milled..... tons		2,875,760	2,669	211,440	3,089,869
Bullion recovered by amalgamation..... crude oz.		142,715	1,321	50	144,086
Ores cyanided..... tons		2,867,646		99,510	2,967,156
Bullion recovered by cyanidation..... crude oz.		1,436,992		23,303	1,460,295
Bullion shipped..... crude oz.	681	1,579,997	1,398	23,359	1,605,425
Contents of bullion shipped—Gold..... fine oz.	595	1,236,126	(a) 1,180	15,361	1,253,262
Silver..... fine oz.	44	208,454	143	742	209,383
Net value..... \$	12,346	25,692,570	24,490	316,763	26,046,169
(b) Net value of ores, slags and residues sold..... \$	24,587	32,756		4,996,595	5,053,938
Amount of exchange premium..... \$		196,748		1,252	198,000
<b>Total net receipts..... \$</b>	<b>36,933</b>	<b>25,922,074</b>	<b>24,490</b>	<b>5,314,610</b>	<b>31,298,107</b>
<b>1925</b>					
Number of producing mines.....	4	13	1	9	27
Ore mined..... tons	9,842	3,400,973	7,132	228,513	3,646,460
Ore milled..... tons	9,593	3,394,924	7,132	115,372	3,527,021
Bullion recovered by amalgamation..... crude oz.	1,715	168,174	4,946	6,680	181,515
Ores cyanided..... tons		3,358,234		100,217	3,458,451
Bullion recovered by cyanidation..... crude oz.		1,682,592		31,311	1,713,903
Bullion shipped..... crude oz.	1,644	1,850,466	4,946	37,991	1,895,047
Contents of bullion shipped—Gold..... fine oz.	1,564	1,457,023	4,300	19,407	1,482,294
Silver..... fine oz.	75	251,830	446	2,163	254,514
Net value..... \$	32,342	30,224,456	89,210	399,305	30,745,313
Net value of ores, slags and residues sold..... \$		83,420	1,644	4,207,822	4,292,886
Amount of exchange discount..... \$		2,838			2,838
<b>Total net receipts..... \$</b>	<b>32,342</b>	<b>30,305,038</b>	<b>90,854</b>	<b>4,607,127</b>	<b>35,035,361</b>

(a) Includes 49 oz. received by the Royal Mint from individuals.

(b) Includes \$16,978 value of arsenic produced in B.C.

Table 250—Ores, Concentrates and Slags Shipped from the Gold Mines of Canada, 1924 and 1925

Item	Ontario, Manitoba and Nova Scotia mines shipping		British Columbia mines shipping		Canada
	To Canadian smelters	To Foreign smelters	To Canadian smelters	To Foreign smelters	
1924					
Number of mines.....	1	3	6	3	*11
Tons of ore, etc., shipped.....	39	1,145	21,449	86,719	109,352
Metal content—					
Gold.....oz.	107	1,820	17,250	129,326	148,503
Silver.....oz.	107	6,288	429,290	2,604,538	3,040,223
Copper.....lb.		1,232	432		1,664
Lead.....lb.		1,250	334	452,010	453,594
Arsenic.....lb.		381,092		495,250	876,342
Net value.....\$	1,837	55,506	619,094	4,377,501	5,053,938
1925					
Number of mines.....	1	3	6	4	*13
Tons of ore, etc., shipped.....	26	845	29,285	98,497	128,653
Metal content—					
Gold.....oz.	86	3,415	20,509	107,132	131,142
Silver.....oz.	26	3,992	414,035	2,088,538	2,506,591
Copper.....lb.		344,928	633	180	345,741
Lead.....lb.			1,300	870,971	872,271
Arsenic.....lb.				1,277,696	1,277,696
Net value.....\$	1,644	83,420	659,208	3,548,614	4,292,886

\*During 1924 two companies and in 1925 one company in British Columbia shipped to both Foreign and Canadian smelters.

### 5. The Copper-Gold-Silver Mining Industry

The copper-gold-silver mining industry comprises a group of mines producing ore containing gold, silver and copper, in which the copper values predominate. The largest mines and the greatest number of this type are located in British Columbia; Manitoba is known to have big ore reserves of copper but as yet these have not been fully developed owing to the lack of adequate transportation and smelting facilities; Ontario has several small properties of this class, but they are mostly idle. In the province of Quebec the Eustis mine is at present the only producing property in this group, but recent developments in the section of the province adjacent to the Kirkland lake area in Ontario bid fair to make Quebec, an outstanding copper-gold producer in the very near future. British Columbia is the largest copper-producing province of the Dominion.

Ores from the principal mines in this group are handled as follows: the Granby Consolidated Mining, Smelting and Power Company mine and smelt on the property at Anyox on the Portland canal; the Britannia Mining and Smelting Company situated at Britannia Beach on Howe sound; and the Belmont Surf Inlet Mining Company, Ltd., export ore and concentrates to the Tacoma smelter of the American Smelting and Refining Company. From the mines of the Rossland district, which are mainly owned and operated by the Consolidated Mining and Smelting Company, ore is shipped to the smelter at Trail. The Allenby Copper Company which is mining at Copper Mountain near Princeton, B.C., concentrate the ore in their own mill and ship the concentrates to the smelter at Trail.

In all, 41 mines of this class were reported in 1925; of these, 9 were producing, 8 being located in British Columbia and one in Quebec. Of the remaining 32 mines which were operating, but not producing, 28 were located in the province of Quebec and 4 in British Columbia.

Because of close interplant relations, some companies do not find it possible to separate the capital invested in mines from that invested in their smelting operations. The Granby Consolidated is one of these and the total capital employed by this company has been credited in this report to "Metallurgical Works," in which total also the capital employed by the Consolidated Mining and Smelting Company in their smelter at Trail has been

included, but the amount invested in different mining properties have been accounted for separately, some in the copper-gold-silver group and some in the silver-lead-zinc group. With these limitations, the capital employed in the copper-gold-silver industry in 1925 amounted to approximately \$23,000,000 of which over \$9,000,000 was invested in the province of Quebec, and \$14,000,000 in British Columbia. Shipments of ores and concentrates from the copper-gold-silver mines in Canada amounted to slightly less than a million tons valued at approximately 7.7 millions of dollars. Foreign shipments amounted to over 113,000 tons valued at about 5 million dollars. Shipments to Canadian smelters amounted to 850,000 tons having a value of about 2.6 million dollars.

Salaries and wages paid in the industry amounted to \$3,555,844 and employees numbered 2,374 persons. Of the wage-earners, 861 were employed on the surface, 1,055 underground and 247 in the mills. Bituminous coal, coke, gasoline, oil, etc. consumed, cost over \$152,000 and the electric power used was valued at slightly more than \$261,000. Power equipment employed numbered 400 units having a total rating of 32,483 h.p.

**Table 251.—Principal Statistics of the Copper-Gold-Silver Industry in Canada, 1921-1925**

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and *electricity	Net value of bullion, ore, concentrates or residues shipped from the mines and smelters
			\$		\$	\$	\$	\$
1921.....	14	18	5,256,051	1,222	1,573,221	1,192,018	76,663	2,589,314
1922.....	18	18	6,519,516	826	1,150,275	385,493	77,231	2,031,671
1923.....	14	14	19,108,072	1,790	3,004,292	726,613	334,696	4,361,486
1924.....	15	15	19,099,845	2,118	3,292,228	1,855,511	366,153	5,226,859
1925.....	40	41	23,200,580	2,374	3,555,844	†	413,767	7,758,990

\*For 1921 and 1922 cost of electricity is included with miscellaneous expenses.

†No data available.

**Table 252.—Capital Employed in the Copper-Gold-Silver Mining Industry in Canada 1924 and 1925**

	British Columbia				Quebec				Canada			
	1924		1925		1924		1925		1924		1925	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
Producing mines....	10	17,196,699	8	14,150,743	1	1,796,332	1	1,516,660	11	18,993,031	9	15,667,403
Operating but not producing mines..	4	106,814	4	156,213	.....	.....	28	7,376,964	4	106,814	32	7,533,177
<b>Total.....</b>	<b>14</b>	<b>17,303,513</b>	<b>12</b>	<b>14,306,956</b>	<b>1</b>	<b>1,796,332</b>	<b>29</b>	<b>8,893,624</b>	<b>15</b>	<b>19,099,845</b>	<b>41</b>	<b>23,200,580</b>

a Does not include the capital of Granby Co. Anyox, B.C.

**Table 253.—Employees, Salaries and Wages in the Copper-Gold-Silver Mining Industry in Canada, 1924 and 1925**

	1924			1925		
	Number of employees		Salaries and wages	Number of employees		Salaries and wages
	Male	Female	\$	Male	Female	\$
<b>SALARIED EMPLOYEES—</b>						
Total.....	105	7	267,196	194	17	416,065
<b>WAGE-EARNERS—</b>						
Surface.....	834	.....	3,025,032	1,108	.....	3,139,779
Underground.....	1,172	.....	.....	1,055	.....	.....
Total.....	2,006	.....	3,025,032	2,163	.....	3,139,779
<b>Grand Total.....</b>	<b>2,111</b>	<b>7</b>	<b>3,292,228</b>	<b>2,357</b>	<b>17</b>	<b>3,555,844</b>

**Table 254.—Number of Wage-Earners in the Copper-Gold-Silver Mining Industry in Canada, by Months, 1924 and 1925**

Month	1924			1925		
	Number of wage-earners			Number of wage-earners		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	813	1,152	1,965	786	1,203	1,989
February.....	826	1,161	1,987	810	1,087	1,897
March.....	838	1,120	1,958	804	1,071	1,875
April.....	861	1,172	2,033	820	954	1,784
May.....	900	1,245	2,145	889	912	1,801
June.....	910	1,141	2,051	998	939	1,937
July.....	728	1,173	1,901	1,023	936	1,959
August.....	808	1,106	1,914	1,054	956	2,010
September.....	806	1,154	1,960	1,085	1,012	2,097
October.....	801	1,143	1,944	1,092	1,058	2,150
November.....	758	1,170	1,928	1,067	1,124	2,191
December.....	740	1,077	1,817	1,043	1,173	2,216
<b>Average.....</b>	<b>834</b>	<b>1,172</b>	<b>2,006</b>	<b>1,108</b>	<b>1,055</b>	<b>2,163</b>

**Table 255.—Shipments from the Copper-Gold-Silver Mines of Canada, 1924 and 1925**

Destination	Quantity	Net Value	Content as determined by settlement assay			
			Gold	Silver	Copper	Sulphur
1924	Tons	\$	Fine oz.	Fine oz.	Pounds	Tons
6 mines shipped to Canadian smelters—						
Ores.....	966,264	1,474,674	44,436	535,000	42,518,595	
*Concentrates.....	6,770	41,253	66	3,483	2,070,594	1,976
5 mines shipped to foreign smelters—						
Ores.....						
Concentrates.....	100,114	3,710,932	37,468	152,430	33,174,018	
<b>Total.....</b>	<b>1,073,148</b>	<b>5,226,859</b>	<b>81,970</b>	<b>690,913</b>	<b>77,763,207</b>	<b>1,976</b>
1925						
7 mines shipped to Canadian smelters—						
Ores.....	828,806	2,106,149	17,465	358,736	28,863,739	
*Concentrates.....	23,468	511,738	330	26,366	4,883,476	6,125
4 mines shipped to foreign smelters—						
Ores.....						
Concentrates.....	113,180	5,141,103	44,606	182,657	39,942,730	
<b>Total.....</b>	<b>965,454</b>	<b>7,758,990</b>	<b>62,401</b>	<b>567,759</b>	<b>73,689,945</b>	<b>6,125</b>

\* Includes 4,032 tons of sulphur concentrates containing 49% sulphur, in 1924, and 12,250 tons containing 50% sulphur in 1925, shipped from the Eustis Mine of Quebec province.

## THE SILVER MINING INDUSTRY IN CANADA

(Including the Silver-Cobalt Mining Industry and the Silver-Lead-Zinc Mining Industry.)

1. Definition of the Industry.
2. Historical.
3. Sources of silver, lead, zinc and cobalt.
4. Importance of these metals.
5. The Silver-Cobalt Industry—Ontario.
6. The Silver-Lead-Zinc Industry.
  - (a) British Columbia.
  - (b) Yukon.
  - (c) Quebec.
  - (d) General Statistics.

1. **Definition of the Industry.**—Silver mining is not a distinct industry in Canada as silver is found only in association with other metals such as lead and zinc, particularly in the West, with cobalt in northern Ontario, and with lode and placer gold, copper and other

metals in various localities. Industrial reviews concerning the production of silver must therefore be limited to a discussion on the sources of supply and to general statistics on each of the contributing sections of the mining industry. Silver-lead-zinc mining is a very important industry in British Columbia, the Yukon Territory, Quebec and to a less extent in Ontario, whereas the mining of silver-cobalt ores is carried on in Canada only in the province of Ontario. While silver is the predominating metal in some ores of the silver-lead-zinc group there are other mines which yield an ore carrying lead and zinc in greater values so that the silver content is of secondary importance. Silver values are the governing feature in the silver-cobalt ores of Ontario. Alluvial and lode gold and ores containing copper and gold usually contain commercial values in silver also, but in these ores, the metals other than silver are generally of greater importance.

**2. Historical.**—Silver production in Canada dates back many years, the earliest account being that of the finding of argentiferous-lead on the Quebec side of lake Temiskaming about 1686; it is somewhat remarkable that the cobalt area lying within a short distance of this property, and which later became one of the richest silver camps in the world was not known until 1903. In 1868, Thomas McFarlane, working on a rock about 80 or 90 feet in diameter, off Thunder Cape in lake Superior, discovered a vein containing galena and silver which was afterwards worked as the Silver Islet mine; this property yielded about 3.5 million dollars' worth of silver before it was flooded by the waters of the lake. Then in 1903 the next big find was made. Long Lake, later called "Cobalt Lake" was the centre of the area which became known as the "Cobalt-Silver camp." This camp and the allied camps of Gowganda and South Lorrain have been in continuous operation since that time and at the end of 1925 had yielded upwards of 364 million ounces of silver.

In British Columbia the main source of silver for many years was from the silver-lead-zinc ores of the east and west Kootenay districts. These ores were complex and because of the finely-disseminated sulphides, were very hard to treat. The Consolidated Mining and Smelting Company of Trail, B.C., has been the pioneer in Canada in the treatment of these ores. For years the zinc content of British Columbia ores was regarded as detrimental, and treatment of these ores by the smelter could only be carried on profitably by the imposition of penalty charges based on the zinc content. But as the result of an exhaustive research covering a period of years, a method of concentrating and treatment was evolved whereby the ores could be handled more economically. Enhanced prices of lead and zinc in the last few years also proved to be the means of bringing back into a paying position many mines that formerly had been unable to operate at a profit.

In the Yukon, the rich silver-lead ores of the Keno Hill district provide the principal source of the silver production from that section of Canada. Quebec province also, in the last few years, has added its quota in the output of these metals; considerable work is being done on prospects in the Gaspé peninsula.

Nova Scotia and the Prairie Provinces have yielded only small quantities of these metals up to the present time, but development and investigational work is being carried on at a zinc property in Cape Breton Island and it is anticipated that Nova Scotia will soon be a contributing factor in Canada's zinc production.

**3. Sources of Silver, Lead, Zinc and Cobalt.**—In 1925 the total production of silver from Canadian ores of all kinds, amounted to 20,228,988 fine ounces and included (a) silver contained in silver and gold bullion produced, 9,157,412 fine ounces or 45.2 per cent of the total, (b) silver contained in blister copper or lead bullion made, 6,177,075 fine ounces or 30.5 per cent, and (c) silver estimated as recoverable from ores of all kinds exported for treatment in foreign smelters, 4,894,501 fine ounces or 24.3 per cent.

The production of lead during the same year amounted to 253,590,578 pounds, an advance of 44.5 per cent above the previous high record of 175,485,499 pounds set up in 1924. Of the total, 227,136,734 pounds were contained in the base bullion produced at Trail; the remaining 26,453,844 pounds included lead estimated as recoverable from those silver-lead-zinc ores which were exported from British Columbia, the Yukon and Quebec, and pig lead made at Galetta in Ontario with also small quantities of lead contained in silver-lead-bismuth bullion recovered by the smelters treating cobalt ores.

Zinc production during the same year amounted to 109,268,511 pounds, an increase of 10.4 per cent over the Canadian production of 98,909,077 pounds in 1924. Most of Canada's

zinc output is in the form of metallic zinc produced by the Consolidated Mining and Smelting Company at Trail, B.C. The remainder represents zinc estimated as recoverable from ores and residues exported for treatment in foreign smelters.

Computed as the sum of the cobalt contained in metal, oxides, salts, ores, concentrates and residues marketed in 1925, the production of cobalt amounted to 1,116,492 pounds valued at \$2,328,517.

**4. Importance of these Metals.**—Lead production in Canada holds third place, silver seventh place and zinc ninth place in point of value among the metals and minerals produced. In 1925, Canada ranked fourth among the world's silver-producing countries: Mexico produced 92 million ounces; United States, 61 million ounces; and Peru, 21 million ounces. In the production of lead, Canada was surpassed by United States, Mexico, Australia and Spain. In smelter output of zinc, the United States had the highest production of any country, being followed by Belgium, Upper Silesia, France, Germany, Australia, Great Britain and Canada in the order named.

For the past two decades Canada has been the main source of the world's supply of cobalt. It is reported that the Union Minière de Haut Katanga of South Africa is now also producing cobalt and it is probable that this production will have some effect on world prices and sales of this metal.

**5. The Silver-Cobalt Industry (Ontario).**—Ontario with its wonderful silver deposits at Cobalt, South Lorrain and Gowganda, continues to lead among the silver-producing provinces and at the end of 1925 was still the largest producer of cobalt in the world. Some of the older properties around Cobalt have been worked out but new discoveries in the South Lorrain field and further development in the Gowganda district assist in keeping production fairly constant.

After the remarkable Silver Islet production, comparatively little silver was produced in Ontario until the discovery of the mineral wealth of the Cobalt area in 1903. From 1905 when the output of silver was over 2,000,000 ounces, the production increased rapidly until the peak year of 1911 was reached. In that year the recorded production was 30,540,754 ounces. It dropped down to 29,000,000 ounces in the following year and followed a generally downward trend until 1921 when less than 10,000,000 ounces was reported; there has been little change in the volume of output during recent years. In 1925, in the Cobalt area there were 18 producing mines; in the South Lorrain field, 4 mines, were on the producing list; and in Gowganda, 4 mines. The Nipissing mine was the principal silver producer in these districts. Other large mines in order of production were Keeley, Frontier Lorrain, Castle Tretheway, Mining Corporation, O'Brien, Trout Lake and McKinley-Darragh-Savage.

Mining and milling only are being considered in this review; smelting of the cobalt ores in so far as Canadian operations are concerned will be reviewed in the section on the metallurgical industry. Only two mining companies, namely, the Mining Corporation of Canada, Ltd., and the Nipissing Mining Company, Ltd., produced refined silver bullion in 1925. Other mines shipped ores either to one of these companies or to the Deloro Smelting and Refining Company or to foreign smelters. The greater part of the silver from the ores and concentrates treated by the two companies mentioned above is extracted by cyanidation and the residues which may contain arsenic, cobalt, nickel and some silver, are either sent to the Deloro Smelting and Refining Company or are exported for treatment to foreign smelters. There were 26 shipping mines in the silver-cobalt industry in 1925. The output of ore was 357,029 tons, the quantity milled amounted to 359,788 tons, and the concentrates produced totalled 6,449 tons. There were 176,511 tons of material cyanided. Silver bullion production amounted to 6,079,142 ounces.

Shipments of ores and concentrates to points outside the camp amounted to 8,086 tons in 1925 as against 7,231 tons during 1924.

Salaried officials numbered 136 in 1925 as against 132 in 1924. Wage-earners increased in number to 1,652 persons from the total of 1,637 in the previous year. Salaries and wages totalled \$2,576,414. Fuel used cost \$498,874 at the mines; this sum included \$258,000 spent for electric power. Power equipment employed consisted of 225 units having a total rating of 8,897 h.p.

**Table 256.—Principal Statistics of the Silver-Cobalt Mining Industry in Canada, 1921-1925**

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net value of bullion, ore, concentrates or residues shipped from the mines and smelters
			\$		\$	\$	\$	\$
1921.....	33	39	31,198,418	1,224	1,739,706	1,799,458	108,573	6,316,812
1922.....	26	30	29,459,603	1,403	1,532,736	2,271,186	98,242	8,222,303
1923.....	18	24	31,334,050	1,408	1,949,738	2,132,114	410,089	6,521,853
1924.....	26	34	41,013,466	1,769	2,534,304	2,479,316	468,651	6,594,032
1925.....	33	38	44,045,619	1,788	2,576,414	†	498,874	6,611,644

\* For 1921 and 1922 cost of electricity is included with miscellaneous expenses.

† No data available.

**Table 257.—Capital Employed in the Silver-Cobalt Mining Industry in Canada, 1924 and 1925**

	1924	1925
	\$	\$
Capital employed as represented by—		
Cost of lands, buildings, and equipment.....	31,846,993	34,024,247
Cost of supplies and stock on hand.....	1,588,429	1,657,085
Cash, trading and operating accounts and bills receivable.....	7,578,044	8,364,287
<b>Total.....</b>	<b>41,013,466</b>	<b>44,045,619</b>

**Table 258.—Employees, Salaries and Wages in the Silver-Cobalt Mining Industry in Canada, 1924 and 1925**

	1924		1925	
	Number	Salaries and wages	Number	Salaries and wages
SALARIED EMPLOYEES.....	132	\$ 307,159	136	\$ 358,190
WAGE-EARNERS—				
Mine.....	1,359	2,227,145	1,488	2,218,224
Mill.....	278		164	
Total.....	1,637	2,227,145	1,652	2,218,224
<b>Grand Total.....</b>	<b>1,769</b>	<b>2,534,304</b>	<b>1,788</b>	<b>2,576,414</b>

**Table 259.—Number of Wage-Earners in the Silver-Cobalt Mining Industry in Canada by Months, 1924 and 1925**

Month	1924				1925			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Underground			Surface	Underground		
January.....	385	814	255	1,454	403	954	174	1,531
February.....	412	821	257	1,490	392	913	169	1,474
March.....	429	831	258	1,518	389	922	173	1,484
April.....	401	855	262	1,518	414	956	170	1,540
May.....	297	900	271	1,568	416	966	166	1,548
June.....	371	820	255	1,446	447	992	163	1,602
July.....	400	791	253	1,444	409	1,030	164	1,603
August.....	408	802	253	1,463	468	1,002	162	1,632
September.....	405	828	257	1,490	491	1,008	163	1,662
October.....	453	865	261	1,579	502	1,030	162	1,694
November.....	428	867	258	1,553	508	1,008	159	1,675
December.....	406	875	262	1,543	462	981	160	1,603
<b>Average.....</b>	<b>460</b>	<b>899</b>	<b>278</b>	<b>1,637</b>	<b>482</b>	<b>1,006</b>	<b>164</b>	<b>1,652</b>

Table 260.—Principal Statistics of Silver-Cobalt Mines and Mills Operating in Canada, 1924 and 1925

	1924	1925
Number of mines in operation.....	34	38
Ore mined.....Tons	433,176	357,029
Ores treated.....Tons	428,509	359,788
Tailings treated.....Tons		
Concentrates produced.....Tons	7,360	6,449
Quantity of material cyanided.....Tons	168,193	176,511
Bullion recovered.....Fine ounces	5,577,875	6,079,142
Bullion sold.....Fine ounces	5,004,992	5,551,112
Net value to operators.....\$	3,369,664	3,823,921

Table 261.—Shipments of Ores, Concentrates and Residues from the Cobalt Camp 1924 and 1925

Kind	Quantity	Gross value (a)	Net value (b)	Metallic content paid for		
				Silver	Cobalt	Copper
1924	Tons	\$	\$	fine oz.	lb.	lb.
<i>To Canadian Smelters—</i>						
Ores.....	929	1,292,277	1,232,557	(c) 1,835,764	143,952	
Concentrates and residues.....	3,890	1,580,128	1,435,032	2,098,941	581,380	
<i>To Foreign Smelters—</i>						
Concentrates.....	2,412	741,161	556,779	886,292	93,780	107,252
<b>Total.....</b>	<b>7,231</b>	<b>3,613,566</b>	<b>(d) 3,224,368</b>	<b>4,820,997</b>	<b>819,112</b>	<b>107,252</b>
1925						
<i>To Canadian Smelters—</i>						
Ores.....	1,921	1,011,011	977,495	(e) 1,320,503	460,567	
Concentrates and residues.....	3,074	(f) 1,252,378	(f) 1,136,025	1,708,152	261,886	
<i>To Foreign Smelters—</i>						
Concentrates.....	3,091	796,764	674,203	1,090,242	105,094	154,661
<b>Total.....</b>	<b>8,086</b>	<b>3,060,123</b>	<b>(f) 2,787,723</b>	<b>4,118,897</b>	<b>827,547</b>	<b>154,661</b>

(a) Gross value means value of the metals paid for before deducting transportation and treatment charges, and includes exchange premium received.

(b) Net value is actual amount received by operator.

(c) Includes 15,406 ounces silver in nuggets shipped to Ontario Provincial Government.

(d) Includes \$10,398 paid for nuggets shipped to Ontario Provincial Government.

(e) Includes 910 ounces shipped to Ontario Provincial Government.

(f) Includes \$674 paid for nuggets shipped to Ontario Provincial Government.

## 6. The Silver-Lead-Zinc Industry

6. **The Silver-Lead-Zinc Industry.**—(a) **British Columbia.**—British Columbia which held second place among the silver-producing provinces in 1925, and first place among the provinces producing lead and zinc, contributed about 42.5 per cent of the Dominion total of silver, 96 per cent of the lead, and 90.7 per cent of the zinc; most of this yield being obtained from the smelting of silver-lead-zinc ores. In this province, production of these three metals has increased remarkably during the past three years. With the early development of the silver-lead ores of the Kootenays silver production reached about the 5 million ounce mark in 1897, only to fall away to about 3 million ounces in 1899. Again, in 1901, the 5 million mark was reached but by 1911 production had fallen to less than 2 million ounces. From that time forward, the output increased; first through the demand created by the war, and later as a result of the development of the Premier mine in Northern British Columbia, and also because of the application of flotation methods in the treatment of silver-lead-zinc ores. Another factor contributing to the growth was the rise in the prices of lead and zinc and the maintenance of the prices at generally high levels. Increased production of the famous Sullivan lead

and zinc mine also added appreciably to the silver output; indeed, this mine, though nominally a lead-zinc property, was in 1925 the largest silver-producing mine in Canada.

The Trial smelter buys silver-lead-zinc ores but much silver and some lead are contained in ores exported by the mines on the coast; most of these ores are mined primarily for their copper and gold values but the other associated metals, including silver, are recovered in the smelting process.

(b) **Yukon.**—In the Yukon, the Keno Hill district is the principal producer of silver and lead. According to a report given to the Mining Lands Branch of the Department of the Interior by the Gold Commissioner of the Yukon it has been shown that ore values continue with depth. The Treadwell Yukon Company, Limited, is the largest producer in this district, having shipped 1,457 tons of ore and concentrates during 1925. The mill which was completed in the summer of 1925 has worked to full capacity since it was started and has treated ores from other mines in addition to those from the company's own mines. This has been of great assistance to the smaller operators who have thus been enabled to continue development work with the proceeds.

(c) **Quebec.**—Production of silver-lead-zinc ores in Quebec is carried on in the vicinity of Notre Dame des Anges where ore was discovered in 1910. Several early attempts to concentrate this ore failed but more recently, as the result of a selective flotation process, worked out by the Mines Branch, Ottawa, about the end of 1924, production has been carried on successfully and about four times as much ore was shipped in 1925 as in 1924.

Although a small amount of lead is produced from the silver-cobalt ores, the greater part of Ontario's lead production is derived from the lead mine at Galetta in Carleton county. The ore of this mine carries no silver and only a small amount of zinc. A separation is made of the zinc and lead concentrates, the zinc concentrates being accumulated for shipment to foreign smelters; the galena is smelted to high-grade pig lead on the property.

(d) **Industry.—General Statistics.**—Producing, concentrating, smelting and refining of ores of the silver-lead-zinc group is an industry that is fairly well confined to the province of British Columbia. But as already noted there are lead-zinc properties in the Yukon, the Galetta property in Ontario and the Tetreault mine at Notre Dame des Anges in Quebec.

As thus defined the silver-lead-zinc industry represented 94 mines operated by 89 concerns in 1925. Ore raised from 82 of these mines totalled 1,474,764 tons, of which 1,392,892 tons were milled, yielding 173,665 tons of lead concentrates and 173,894 tons of zinc concentrates. Shipments of lead ores, lead concentrates, zinc ore, zinc concentrates and dry ore from the mines during the year totalled 381,760 tons valued at \$21,902,686. As determined by settlement assay the total metal contents of these shipments included 2,356 ounces of gold, 6,701,313 ounces of silver, 250,184,565 pounds of lead and 177,401,660 pounds of zinc.

Comparable statistics for 1924 show that 94 mines were operated by 82 concerns. Of this number 83 mines raised ore totalling 1,200,039 tons, of which 1,087,583 tons were milled, yielding 133,984 tons of lead concentrates and 130,365 tons of zinc concentrates. Shipments of lead ores, lead concentrates, zinc ore, zinc concentrates and dry ore from the mines during 1924 totalled 344,765 tons valued at \$16,600,970. As determined by settlement assay the total metal contents of these shipments included 1,691 ounces of gold, 5,096,395 ounces of silver, 202,559,745 pounds of lead and 147,395,308 pounds of zinc.

Capital employed in this industry in 1925 was \$15,735,930 including over 11 million dollars in costs of buildings, plant, machinery and tools, about 1 million dollars for costs of supplies and stocks on hand, and 3.4 million dollars in cash, trading and operating accounts. Salaries totalling over \$322,000 were paid to 150 people, and wages amounting to over 3.5 million dollars were distributed among 2,388 workers. Fuel used during the year cost \$584,000 of which \$307,000 was paid out for electric power. Of the total capital invested, over 9 million dollars was employed in British Columbia; and of the total wages, more than 3 million dollars were paid out in the same province, thus lending emphasis to the statement made above, regarding the importance of silver-lead-zinc mining in British Columbia.

Table 262.—Principal Statistics of the Silver-Lead-Zinc Industry in Canada, 1921-1925

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and *electricity	Net value of bullion, ore concentrate or residues shipped from the mines and smelters
			\$		\$	\$	\$	\$
1921.....	61	72	9,888,421	789	966,171	441,752	78,923	2,177,053
1922.....	75	91	6,828,980	994	1,371,645	1,150,595	83,530	4,173,812
1923.....	87	93	9,203,997	1,352	2,024,752	1,667,932	257,574	6,620,067
1924.....	82	94	12,328,511	1,936	2,943,635	802,882	474,343	16,600,970
1925.....	89	94	15,735,930	2,538	3,867,613	†	584,121	21,902,686

\*For 1921 and 1922 cost of electricity included in miscellaneous expenses.

†No data available.

Table 263.—Capital Employed in the Silver-Lead-Zinc Mining Industry in Canada, 1924 and 1925

Province	Capital employed as represented by			
	Cost of lands, buildings and equipment	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total
1924	\$	\$	\$	\$
Quebec.....	150,000	5,000	.....	155,000
Ontario.....	866,640	264,678	5,834	1,137,152
British Columbia.....	7,624,835	633,342	360,088	8,618,265
Yukon.....	1,893,091	309,548	215,455	2,418,094
<b>Canada.....</b>	<b>10,534,566</b>	<b>1,212,568</b>	<b>581,377</b>	<b>12,328,511</b>
1925				
Quebec.....	2,852,755	41,100	348,789	3,242,644
Ontario.....	867,256	68,567	13,910	949,733
British Columbia.....	5,775,632	658,466	2,751,499	9,185,597
Yukon.....	1,777,045	274,626	306,285	2,357,956
<b>Canada.....</b>	<b>11,272,688</b>	<b>1,042,759</b>	<b>3,420,483</b>	<b>15,735,930</b>

Table 264.—Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry in Canada 1924 and 1925

Province	1924						1925					
	Number of employees					Salaries and wages	Number of employees					Salaries and wages
	On sal- ary	Wage earners			Total em- ployees		On sal- ary	Wage earners			Total em- ployees	
		Sur- face	Under- ground	Mill				Sur- face	Under- ground	Mill		
	No.	No.	No.	No.	No.	\$	No.	No.	No.	No.	No.	\$
Quebec.....	9	17	70	39	135	76,753	11	74	130	69	284	262,838
Ontario.....	8	8	109	41	166	219,211	9	8	119	38	174	249,314
British Columbia.....	100	403	730	277	1,510	2,372,457	120	627	890	323	1,960	3,138,965
Yukon.....	9	59	57	.....	125	275,214	10	53	47	10	120	216,496
Canada .....	126	487	966	357	1,936	2,943,635	150	762	1,186	440	2,538	3,867,613

Table 265.—Number of Wage-Earners Employed in the Silver-Lead-Zinc Mining Industry in Canada, by Months, 1924 and 1925

Month	1924			1925		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	619	789	1,408	845	946	1,791
February.....	655	799	1,454	845	971	1,816
March.....	692	851	1,543	877	942	1,819
April.....	722	860	1,582	932	943	1,875
May.....	778	945	1,723	1,048	968	2,016
June.....	818	961	1,779	1,128	1,058	2,186
July.....	796	994	1,790	1,153	1,068	2,221
August.....	822	1,002	1,824	1,193	1,154	2,347
September.....	874	1,045	1,919	1,271	1,204	2,475
October.....	908	903	1,811	1,308	1,244	2,552
November.....	904	894	1,798	1,263	1,226	2,489
December.....	699	815	1,514	1,066	1,169	2,235
Average.....	844	966	1,810	1,202	1,186	2,388

Table 266.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry, 1924 and 1925

Production	Ontario and Quebec	British Columbia	Yukon	Canada
1924	Tons	Tons	Tons	Tons
Ore mined.....	74,932	1,124,343	764	1,200,039
Ore milled.....	74,932	1,012,651		1,087,583
Concentrates produced—lead.....	3,286	130,698		133,984
“ “ “ “ zinc.....		130,365		130,365
1925				
Ore mined.....	163,634	1,282,741	28,389	1,474,764
Ore milled.....	163,634	1,188,823	40,435	1,392,892
Concentrates produced—lead.....	6,682	164,459	2,524	173,665
“ “ “ “ zinc.....	15,157	158,737		173,894

Table 267.—Products Shipped by Silver-Lead-Zinc Mines in Canada, 1924 and 1925

Location of mines	No. of mines shipping	Product shipped	Quantity shipped	Net value at shipping point	Total metal content as determined by settlement assay			
					Gold	Silver	Lead	Zinc
1924			tons	\$	oz.	oz.	lb.	lb.
Quebec and Ontario..	3	Lead ore.....						
		Lead concentrates.....	4,505	506,797	833	83,383	6,059,733	7,700
		Zinc concentrates.....	3,034	90,674			136,400	3,628,560
		Total.....	7,539	597,471	833	83,383	6,196,133	3,636,260
British Columbia....	76	Lead ore.....	16,732	937,150	521	1,029,675	7,583,748	1,419,429
		Lead concentrates.....	130,630	10,672,543	197	2,982,073	165,532,094	16,303,481
		Zinc ore.....	57,771	337,036	6	262,635	11,840,375	13,539,465
		Zinc concentrates.....	130,564	3,882,561	106	485,517	10,395,846	112,475,606
		Dry ore.....	207	14,062	28	22,689	7,638	1,050
		Total.....	335,904	15,843,352	858	4,782,589	195,359,701	143,739,031
Yukon.....	4	Lead ore.....	1,322	160,147		230,423	1,003,911	20,017
Canada.....	83		344,765	16,600,970	1,691	5,096,395	202,559,745	147,395,308
1925								
Quebec and Ontario..	3	Lead ore.....						
		Lead concentrates.....	7,291	821,728	1,090	166,500	9,425,591	437,900
		Zinc concentrates.....	13,531	515,645	744	66,700	304,300	12,644,431
		Total.....	20,822	1,337,373	1,834	233,200	9,729,891	13,082,331
British Columbia....	77	Lead ore.....	33,952	1,860,599	306	1,129,892	18,959,165	3,228,064
		Lead concentrates.....	164,428	11,988,836	146	3,757,375	207,202,725	19,755,026
		Zinc ore.....	886	39,107	15	46,196	62,017	639,683
		Zinc concentrates.....	158,755	5,927,178	55	564,204	12,142,937	140,695,514
		Dry ore.....	1,009	14,761		29,252	4,000	42
		Total.....	359,030	19,830,481	522	5,526,919	238,370,844	164,319,329
Yukon.....	2	Lead ore.....	616	120,648		150,271	730,353	
		Lead concentrates.....	1,292	614,184		790,923	1,353,477	
		Total.....	1,908	734,832		941,194	2,083,830	
Canada.....	82		381,760	21,902,686	2,356	6,701,313	250,184,565	177,401,660

Table 268.—Shipments of Lead Ores, Concentrates and Dry Ore from Canadian Mines, 1913-1925

Year	Shipments		Lead content in pounds	Silver content in ounces
	Tons	Value		
		\$		
1913.....	85,978	3,276,812	53,807,570	2,564,155
1914.....	70,207	2,652,802	50,527,130	2,501,820
1915.....	73,752	2,958,394	48,708,005	2,954,175
1916.....	84,516	4,538,500	54,124,628	2,582,952
1917.....	46,799	3,866,862	38,696,116	1,670,064
1918.....	75,256	4,705,573	46,843,602	2,314,542
1919.....	54,508	3,044,839	32,147,989	2,185,376
1920.....	69,493	2,985,848	36,325,507	2,882,178
1921.....	15,259	671,313	9,517,616	989,374
1922.....	27,203	1,803,575	21,335,850	2,163,637
1923.....	76,886	4,692,755	66,770,926	3,745,129
1924.....	153,396	12,290,699	180,187,124	4,348,243
1925.....	208,588	15,420,756	237,675,311	6,024,132

Table 269.—Shipments of Zinc Ores from Canadian Mines, 1898-1925

Year	Zinc ore shipped		Metallic zinc in ore shipped	Year	Zinc ore shipped		Metallic zinc in ore shipped
	Tons	Value			Tons	Value	
		\$	Pounds			\$	Pounds
1898.....	1,162	11,000	788,000	1912.....	6,415	215,149	5,354,700
1899.....	865	18,165	814,000	1913.....	7,889	186,827	7,069,800
1900.....	261	4,810	212,000	1914.....	10,893	262,563	9,101,460
1901*.....				1915.....	14,895	554,938	12,231,439
1902.....	158	1,659	142,200	1916.....	82,077	1,086,249	48,498,078
1903.....	1,000	10,500	900,000	1917.....	116,489	1,323,985	64,655,713
1904.....	597	3,700	477,568	1918.....	121,200	1,228,195	63,026,464
1905.....	9,413	139,200	*	1919.....	135,535	1,049,493	59,959,709
1906.....	1,154	23,800	*	1920.....	249,136	1,157,844	91,033,202
1907.....	1,573	49,100	*	1921.....	297,406	1,498,716	98,799,093
1908.....	452	3,215	*	1922.....	356,096	2,357,849	102,975,964
1909†.....	18,371	242,699	16,468,204	1923.....	279,229	1,853,114	96,148,734
1910.....	5,063	120,003	4,361,712	1924.....	191,369	4,310,271	129,643,631
1911.....	2,590	101,072	2,346,849	1925.....	173,172	6,481,930	153,980,628

\*Figures not available.

†Includes 7,424 tons shipped late in 1908.

Table 270.—Destination of Shipments from Silver-Lead-Zinc Mines in Canada, 1924 and 1925

Product shipped	Tons shipped	Net value at shipping point	Total metal content as determined by settlement assay			
			Gold	Silver	Lead	Zinc
		\$	oz.	oz.	lb.	lb.
<b>1924</b>						
<i>To Canadian Smelters—</i>						
Lead ore.....	15,149	788,337	237	784,244	6,893,298	1,419,145
Lead concentrates.....	133,916	11,054,512	197	2,982,073	170,551,579	16,303,481
Zinc ore.....	57,771	337,036	6	262,635	11,840,375	13,539,465
Zinc concentrates.....	73,529	2,211,546	106	368,495	6,110,769	61,085,803
Dry ore.....	207	14,062	28	22,689	7,638	1,050
<b>Total.....</b>	<b>230,572</b>	<b>14,405,493</b>	<b>574</b>	<b>4,420,136</b>	<b>195,403,659</b>	<b>92,348,944</b>
<i>To Foreign Smelters—</i>						
Lead ore.....	2,905	308,960	284	475,854	1,694,361	20,301
Lead concentrates.....	1,219	124,828	833	83,383	1,040,248	7,700
Zinc ore.....						
Zinc concentrates.....	60,069	1,761,689		117,022	4,421,477	55,018,363
<b>Total.....</b>	<b>64,193</b>	<b>2,195,477</b>	<b>1,117</b>	<b>676,259</b>	<b>7,156,086</b>	<b>55,046,364</b>
<b>1925</b>						
<i>To Canadian Smelters—</i>						
Lead ore.....	33,699	1,825,748	286	1,093,184	18,938,416	3,206,969
Lead concentrates.....	158,620	11,846,201	146	3,550,724	201,066,238	18,439,838
Zinc ore.....	886	39,107	15	46,196	62,017	639,683
Zinc concentrates.....	129,099	4,837,320	55	518,912	10,004,727	112,910,307
Dry ore.....	1,009	14,761		29,252	4,000	42
<b>Total.....</b>	<b>323,313</b>	<b>18,573,137</b>	<b>502</b>	<b>5,238,268</b>	<b>230,075,398</b>	<b>135,196,839</b>
<i>To Foreign Smelters—</i>						
Lead ore.....	869	145,499	20	186,979	751,102	21,095
Lead concentrates.....	14,391	1,578,547	1,090	1,164,074	16,915,555	1,753,088
Zinc ore.....						
Zinc concentrates.....	43,187	1,605,503	744	111,992	2,442,510	40,430,638
<b>Total.....</b>	<b>58,447</b>	<b>3,329,549</b>	<b>1,854</b>	<b>1,463,045</b>	<b>20,109,167</b>	<b>42,204,821</b>

## THE NICKEL-COPPER INDUSTRY

**Definition of the Industry.**—The nickel-copper industry in Canada includes the mining, smelting, and to a certain extent, the refining of the nickel-copper ores of the Sudbury district of the province of Ontario. Smelting operations are carried on in close proximity to the mines, while of the two companies operating, one refines in Ontario at Port Colborne and the other at Clydach, Wales.

**Historical.**—Construction of Canadian railways has been responsible in several cases for the discovery of valuable mineral deposits and one of the most outstanding is the discovery of the nickel-copper ores when the Canadian Pacific Railway was being built through the Sudbury district in 1883. The first ores that were discovered were high in copper and were worked primarily in 1886 for the copper content, the presence of nickel not being detected until 1887. Just about this time the use of nickel in the manufacture of nickel steel was introduced and the resulting demand for nickel was the main reason for the successful development of this large industry. Nickel steel was made in large quantities for armament purposes, and nickel production reached its peak during the great war. After hostilities ceased, the demand for nickel was considerably reduced and the nickel industry was depressed. Aggressive research and extensive advertising led to new uses for the metal and thus being found new demands were created, with the result that the nickel industry is now established on a firm peace-time basis and production is gradually approaching the peak production of war-time. During the year 1925 there were 1,264,748 tons of ore raised and shipped either to the concentrator or direct to the smelter, the metallic content being about 22,000 tons of copper and 42,600 tons of nickel.

**Sources of Nickel.**—More than 85 per cent of the world's supply of nickel is mined in Canada and the remainder comes from New Caledonia and Norway. A small amount of nickel is found in the ores of the Cobalt district and is recovered by the smelters operating on the products of the mines from that area.

**Mining.**—During 1925 the Mond Nickel Company operated the Garson, Worthington, Levack and Frood Extension mines, while the International Nickel Company of Canada operated the Creighton mine. Some ore was also raised from the Frood mine for experimental purposes. The ore in the Sudbury district averages from 2 to 4 per cent of nickel and from 1 to 3 per cent of copper, and is a mixture of the sulphides of copper and nickel and iron in the form of pyrrhotite and chalcopyrite associated with norite, a basic intrusive rock. Open pit methods of mining were first used, but later, underground workings were adopted. Shafts are sunk and haulage ways are driven into a solid foot wall, the ore being intersected at intervals by cross cuts. The ore is usually hoisted to rock houses where in most cases it is crushed and hand-sorted, giving a high-grade smelting product. The handling of the ore from the Frood Mine is an exception to this practice, as it cannot be hand-sorted satisfactorily because the valuable minerals are finely disseminated through the enclosing rock, making it necessary to crush and concentrate before smelting.

**Smelting.**—The operating companies use different methods in the preparation of the ore for smelter. The International Nickel Company heap-roasts the coarse ore before smelting, and the Mond Nickel Company roasts only the fines and flue dust on Dwight-Lloyd Sintering machines. Both companies smelt in water-jacketed furnaces, producing a slag which goes to the dump and a matte which contains 15 to 25 per cent of copper-nickel. The matte is then sent to a basic converter where practically all of the iron and part of the sulphur are eliminated. The product of these converters, which is known as bessemer matte, contains about 80 per cent copper-nickel, 19.5 per cent sulphur and 0.5 per cent iron, and is then shipped to the refineries for further treatment.

The International Nickel Company ships some matte to the Port Colborne refinery, where converter copper, electrolytic nickel, refined nickel and nickel oxide are produced; residues from the electrolytic process containing gold, silver, platinum, palladium and other precious metals are exported to the United States for further treatment. The remainder of the matte is shipped to Huntingdon, West Virginia, U.S.A., to be manufactured into monel metal, an alloy of copper and nickel in which the constituents are present in the

same proportions in which they occur in the ore and are not separated during refining process. A considerable market has been built up for this alloy because of its resistance to corrosion. Chemical works, creameries, and other plants of a similar nature, are gradually increasing their uses of this metal.

The Mond Nickel Company ships the smelter product to the refinery at Clydach, Wales, where nickel metal of very high purity is made. The copper is converted to copper sulphate, the market for this material being in southern France and Italy, where it is used as an insecticide in vineyards of those countries.

In 1925 nickel smelters received 1,264,748 tons of ore and smelted 1,258,849 tons from which 70,286 tons of matte were made containing 36,596 tons of nickel and 19,636 tons of copper. Shipments during the year to Canadian refineries amounted to 38,567 tons of copper-nickel matte and to United States and British refineries, 32,397 tons.

The capital employed in the nickel-copper mining, smelting and refining industry amounted to approximately 66 million dollars and included the cost of lands, buildings, plant, machinery and tools, supplies and product on hand, cash, trading and operating accounts at the different mines, smelters and refineries.

Salaried employees numbered 163 persons, who received \$455,055 for their services. There was an average of 3,270 wage-earners, 1,392 of whom worked in and about the mine and 1,878 around the smelters and refinery; the wages paid to these were in the neighbourhood of 4.5 million dollars.

The total fuel and electricity used amounted to more than 2.5 million dollars in value, of which \$242,000 was expended for electric power, over 1.5 million dollars for coke, \$500,000 for bituminous coal, \$300,000 for fuel oil, the remainder being made up of minor fuel, such as anthracite coal, gasoline, wood and gas. Miscellaneous expenses amounted to nearly 3 million dollars which included taxes, royalties paid and other sundry expenses.

**Table 271.—Principal Statistics of the Nickel-Copper Mining Industry in Canada 1921-1925**

Year	Number of operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Cost of fuel and *electricity	Net value of bullion ore, concentrates or residues shipped from the mines and smelters
			\$		\$	\$	\$	\$
1921.....	3	8	8,107,245	855	734,236	641,036	52,551	1,575,558
1922.....	2	5	8,455,183	440	582,042	608,809	5,828	1,557,414
1923.....	3	4	23,168,812	1,081	1,421,086	1,386,605	181,729	3,562,065
1924.....	3	7	37,189,778	1,421	1,880,823	1,673,492	150,460	4,235,934
1925.....	2	6	38,691,594	1,412	1,867,217	874,323	105,570	3,794,244

\* For 1921 and 1922 cost of electricity is included with miscellaneous expenses.

**Table 272.—Capital Employed in the Nickel-Copper Industry in Canada, 1924 and 1925**

	1924	1925
	\$	\$
Lands, buildings, plant machinery and tools:—		
Mines.....	36,778,684	38,316,904
Smelters.....	14,769,823	10,835,724
Refineries.....	9,600,702	6,370,480
Cost of materials and supplies on hand.....	7,653,042	4,907,157
Cash, trading and operating accounts and bills receivable.....	1,954,218	5,315,404
<b>Total.....</b>	<b>70,756,469</b>	<b>65,745,669</b>

**Table 273.—Salaried Employees by Classes, and Salaries Paid in the Nickel-Copper Industry in Canada, 1924 and 1925**

	At the mines		At the smelters		At the refineries		Total	
	No.	Salaries	No.	Salaries	No.	Salaries	No.	Salaries
		\$		\$		\$		\$
<b>1924</b>								
Superintendents, managers, etc.....	7	35,050	25	97,022	7	39,095	39	171,167
Technical employees—								
Engineers, surveyors, chemists, draughts-	9	13,913	29	60,358	33	43,800	71	118,071
men, etc.....	11	16,923	45	75,949	67	125,493	123	218,365
Clerks, stenographers, etc.....								
<b>Total.....</b>	<b>27</b>	<b>65,886</b>	<b>99</b>	<b>233,329</b>	<b>107</b>	<b>208,388</b>	<b>233</b>	<b>507,603</b>
<b>1925</b>								
Superintendents, managers, etc.....	7	36,300	12	88,200	3	25,200	22	149,700
Technical employees—								
Engineers, surveyors, chemists draughts-	7	14,154	24	69,741	12	21,002	43	104,897
men, etc.....	6	14,284	35	63,651	57	122,523	98	200,458
Clerks, stenographers, etc.....								
<b>Total.....</b>	<b>20</b>	<b>64,738</b>	<b>71</b>	<b>221,592</b>	<b>72</b>	<b>168,725</b>	<b>163</b>	<b>455,055</b>

**Table 274.—Number of Employees by Months and Wages Paid in the Nickel-Copper Industry in Canada, 1924 and 1925**

	At the mines			At the smelters	At the refineries	Total
	Surface	Under ground	Total			
	No.	No.	No.	No.	No.	No.
<b>1924</b>						
January.....	393	937	1,330	1,597	911	3,838
February.....	420	968	1,388	1,618	982	3,988
March.....	505	1,066	1,571	1,636	949	4,156
April.....	501	1,064	1,565	1,632	925	4,122
May.....	523	1,073	1,596	1,649	994	4,239
June.....	524	1,111	1,635	1,673	943	4,251
July.....	543	1,123	1,666	1,622	786	4,074
August.....	403	788	1,191	1,135	384	2,710
September.....	401	761	1,162	1,136	369	2,667
October.....	425	792	1,217	1,123	449	2,789
November.....	441	779	1,220	1,168	483	2,871
December.....	410	784	1,194	1,188	572	2,954
<b>Total wages 1924..... \$</b>			<b>1,814,937</b>	<b>1,867,712</b>	<b>1,044,662</b>	<b>4,727,311</b>
<b>1925</b>						
January.....	441	868	1,309	1,201	526	3,036
February.....	463	904	1,367	1,202	610	3,179
March.....	503	907	1,410	1,236	594	3,240
April.....	523	904	1,427	1,255	479	3,161
May.....	509	892	1,401	1,253	593	3,247
June.....	519	892	1,411	1,231	609	3,251
July.....	494	877	1,371	1,235	441	3,047
August.....	641	845	1,486	1,268	584	3,333
September.....	561	865	1,426	1,308	627	3,361
October.....	549	873	1,422	1,333	609	3,364
November.....	500	921	1,421	1,278	572	3,271
December.....	472	895	1,367	1,301	594	3,262
<b>Total wages 1925..... \$</b>			<b>1,802,479</b>	<b>1,684,571</b>	<b>917,794</b>	<b>4,404,844</b>

**Table 275.—Output from Nickel-Copper Mines and Smelters in Canada, 1924 and 1925**

	1924	1925
Ore mined.....	1,411,978	1,264,748
Ore shipped.....	1,354,650	1,264,748
Content of ores, etc., shipped:		
Copper.....	42,349,039	44,007,830
Nickel.....	81,068,547	85,305,242
Ores and concentrates treated at smelters.....	1,307,693	1,258,849
Matte produced.....	65,944	70,286
Content of matte:		
Copper.....	36,979,424	39,272,899
Nickel.....	69,276,313	73,191,262
Matte shipped to Canadian refineries.....	34,835	38,567
Matte exported to foreign refineries.....	26,565	32,397

Table 276.—Output from Nickel-Copper Refineries in Canada, 1924 and 1925

		1924		1925	
		Quantity	Value	Quantity	Value
			\$		\$
Matte received.....	Tons	34,428		38,534	
Matte treated.....	"	37,613		38,352	
Products made—					
Refined nickel.....	Lb.	a 25,448,868	5,313,582	31,765,325	7,267,004
Nickel oxide.....	"	12,064,870	2,056,259	11,329,713	2,686,395
Converter and refined copper.....	"	17,918,911	2,258,846	20,139,746	2,701,360
Gold.....	Fine oz.	878	17,531	866	17,326
Silver.....	"	58,145	38,607	66,323	45,716
Platinum.....	"	1,353	139,102	468	48,081
Palladium.....	"	1,744	117,887	677	48,765
Iridium and rhodium.....	"	593	51,120	432	40,242
<b>Total value.....</b>			<b>9,992,934</b>		<b>12,854,889</b>

(a) Electrolytic nickel and nickel shot.

### THE NON-FERROUS SMELTING AND REFINING INDUSTRY

**Definition of the Industry.**—In this report the only metallurgical industries considered are those which operate mainly on Canadian ores; these include the smelting of copper ores, smelting and refining of silver-lead-zinc ores, smelting and refining of nickel-copper ores, and the smelting and refining of the silver-cobalt ores. Cyaniding of gold and silver ores has been considered a part of mining operations as it has been found impossible to draw any line of demarcation between the mining proper and operations carried on above ground that give treatment of one kind or another to the crude ore after it is mined.

**Location of the Smelters.**—Canadian smelters generally have been built by mining companies desiring to treat their own ores and to buy customs' ore as well. Smelter locations in most cases have been governed by the proximity of the ore to be treated; for instance, at Anyox, B.C., copper ore from the Hidden Creek mine is smelted by the Granby Consolidated Mining, Smelting and Power Company, Limited. The Hidden Creek mine is in a position to supply the raw material which keeps the smelter going but customs' ore is treated there as well. The blister copper containing some silver and gold made at this smelter is shipped to United States refineries for further treatment. At Trail, B.C., the Consolidated Mining and Smelting Company treats silver-lead-zinc ores and copper-gold-silver ores from its own properties as well as from other mines. Ore from the Sullivan mine is the main source of supply at present and the enormous increase in production from this property has been the reason for the enlargement of the Trail smelter during the past few years. This company produces refined zinc, lead, copper, silver and gold and a small amount of copper sulphate, and also exports some base bullion.

In Ontario the Mond Nickel Company, Limited, and the International Nickel Company of Canada, Limited, treat the copper ores of the Sudbury district at Coniston and Copper Cliff respectively, making a copper-nickel matte. The International Nickel Company operates a refinery at Port Colborne where electrolytic nickel, nickel shot, nickel oxide and converter copper are produced. Residues from the electrolytic plant at the refinery contain gold, silver, platinum, palladium, rhodium, ruthenium, osmium and iridium and are shipped to the refineries in the United States for separation. The Mond Nickel Company exports matte to Clydach, Wales, where a high-grade nickel metal is made. The copper in the matte is recovered as copper sulphate and is sold for insecticidal and fungicidal purposes in the vineyards of southern France and Italy.

The silver-cobalt-nickel ores of the Cobalt district are either treated in Canada by the Deloro Smelting and Refining Company at Deloro, or are exported to the United States or Europe. The Canadian smelter treating these ores produces fine silver, white arsenic, cobalt and nickel oxides, cobalt and nickel salts, cobalt and nickel metal and an alloy of cobalt, chromium and tungsten known as "stellite" which is used as a high-speed cutting tool in machine shops. Another departure, instituted by this company during the last few years, is the manufacture of insecticides, such as paris green, lead arsenate, lime arsenate, and different dusting materials.

A small smelter is operated in Ontario by the Kingdon Mining, Smelting and Manufacturing Company in conjunction with the mining of galena at Galetta, in Carleton county. As the smelting of this ore is comparatively easy and of minor importance when compared with the mining and milling operations and as it is difficult to separate the general statistics dealing with the mining, milling and smelting operations of this company, smelter statistics have been included with mining and milling and are omitted in the figures hereafter given.

**General Statistics.**—Capital actually employed in the metallurgical plants of Canada during 1925 amounted to approximately 62 million dollars as against 66 million dollars in 1924. This amount was made up of approximately 39 million dollars in lands, buildings, plant, machinery and tools, 13 millions in supplies on hand, finished products, ore waiting to be treated, and 10 millions in cash, trading and operating accounts and bills receivable.

There were 5,104 salaried workers and wage-earners employed in the industry to whom \$8,568,997 was paid.

Fuel used during the period amounted to over 5 million dollars in value and included about \$800,000 worth of bituminous coal, \$2,600,000 worth of coke and over \$500,000 worth of fuel oil. The cost of electric power consumed was over \$1,200,000. Miscellaneous expenses totalled nearly 6 million dollars. Products sold by the smelters reached a value of about 56.6 million dollars and the cost of ores treated was estimated at about 27 million dollars.

**Table 277.—Principal Statistics of the Metallurgical Industry in Canada, 1921-1925**

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net Value of bullion, ore, concentrates or residues shipped from the mines and smelters
			\$		\$	\$	\$	\$
1921.....	9	14	82,206,253	3,682	4,406,957	6,538,522	3,097,514	15,332,277
1922.....	8	13	63,160,551	3,384	5,042,787	8,140,628	1,031,572	16,465,205
1923.....	8	10	64,290,931	4,968	7,930,236	6,472,676	5,221,278	20,414,963
1924.....	7	9	66,337,664	5,521	8,136,251	6,884,890	4,765,483	21,760,273
1925.....	5	6	61,691,928	5,104	8,568,997	5,740,829	5,280,674	29,304,384

**Table 278.—Capital Actually Employed in the Metallurgical Plants of Canada, 1924 and 1925**

Item	1924				1925			
	Lands, buildings, plant, machinery and tools	Materials on hand, supplies, finished products, ore on dump	Cash, trading, and operating accounts, bills receivable	Total	Lands, buildings, plant, machinery and tools	Materials on hand, supplies, finished products, ore on dump	Cash trading and operating accounts, bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nickel-copper smelters and refineries.....	24,370,525	7,241,948	1,954,218	33,566,691	17,206,204	4,532,467	5,315,404	27,054,075
Silver-cobalt smelters.....	1,176,220	398,585	2,423,752	3,998,557	1,267,267	414,229	1,958,589	3,640,085
Copper, lead and zinc smelters and refineries.....	21,394,591	6,216,852	1,160,973	28,772,416	20,796,550	7,712,499	2,488,719	30,997,768
<b>Total.....</b>	<b>46,941,336</b>	<b>13,857,385</b>	<b>5,538,943</b>	<b>66,337,664</b>	<b>39,270,021</b>	<b>12,659,195</b>	<b>9,762,712</b>	<b>61,691,928</b>

Table 279.—Employees, Salaries and Wages in the Metallurgical Works in Canada, 1924 and 1925

Group	1924				1925			
	On smelter pay-roll		On refinery pay-roll		On smelter pay-roll		On refinery pay-roll	
	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages	No. of employ-ees	Salaries and wages
		\$		\$		\$		\$
Nickel-Copper Smelters and Re- fineries—								
Salaried employees.....	99	233,329	107	208,388	71	221,592	72	168,725
Wage-earners.....	1,640	1,867,712	883	1,044,662	1,308	1,684,571	570	917,794
Silver-Cobalt-Nickel Smelters and Refineries Combined—								
Salaried employees.....	56	131,795			43	123,396		
Wage-earners.....	372	341,513			367	339,676		
Copper-Lead-Zinc Smelters and Re- fineries—								
Salaried employees.....	257	605,673			251	565,529		
Wage-earners.....	2,107	3,703,179			2,422	4,547,714		
All the Metallurgical Works—								
Superintendents.....	70	337,286	7	39,095	55	300,361	3	25,200
Technical employees: engineers, chemists, draughtsmen, etc....	180	369,869	33	43,800	158	358,036	12	21,002
Clerks, stenographers, etc.....	162	263,642	67	125,493	152	252,120	57	122,523
Total—Salaried employees	412	970,797	107	208,388	365	910,517	72	168,725
Wage-earners.....	4,119	5,912,404	883	1,044,662	4,097	6,571,961	570	917,794
<b>Total</b> .....	<b>4,531</b>	<b>6,883,201</b>	<b>990</b>	<b>1,253,050</b>	<b>4,462</b>	<b>7,482,478</b>	<b>642</b>	<b>1,086,519</b>

Table 280.—Number of Wage-Earners in the Metallurgical Works in Canada, by Months, 1924 and 1925

Month	1924				1925			
	Nickel-copper smelters and refineries	Silver-cobalt-nickel smelters and refineries	Copper-lead-zinc smelters and refineries	Total	Nickel-copper smelters and refineries	Silver-cobalt-nickel smelters and refineries	Copper-lead-zinc smelters and refineries	Total
January.....	2,508	412	1,792	<b>4,712</b>	1,727	310	2,383	<b>4,420</b>
February.....	2,600	345	1,878	<b>4,823</b>	1,812	320	2,361	<b>4,493</b>
March.....	2,585	342	1,927	<b>4,854</b>	1,830	334	2,380	<b>4,544</b>
April.....	2,557	346	1,912	<b>4,815</b>	1,734	385	2,485	<b>4,604</b>
May.....	2,643	376	1,936	<b>4,955</b>	1,846	370	2,291	<b>4,507</b>
June.....	2,616	363	2,080	<b>5,059</b>	1,840	362	2,415	<b>4,617</b>
July.....	2,408	378	2,198	<b>4,984</b>	1,676	365	2,432	<b>4,473</b>
August.....	1,519	362	2,289	<b>4,170</b>	1,852	382	2,405	<b>4,639</b>
September.....	1,505	342	2,270	<b>4,117</b>	1,935	381	2,456	<b>4,772</b>
October.....	1,572	332	2,311	<b>4,215</b>	1,942	409	2,516	<b>4,867</b>
November.....	1,651	233	2,381	<b>4,265</b>	1,850	404	2,470	<b>4,724</b>
December.....	1,760	242	2,297	<b>4,299</b>	1,895	377	2,472	<b>4,744</b>
Average.....	2,523	372	2,107	<b>5,002</b>	1,878	367	2,422	<b>4,667</b>

Table 281.—Ores, Concentrates, etc., Treated in Canadian Smelters, 1924 and 1925

Group	1924	1925
	Tons	Tons
<b>Nickel-Copper—</b>		
Ores treated.....	1,307,694	1,258,849
Matte produced.....	65,944	70,286
Matte exported for refining.....	26,565	32,397
Matte shipped to Canadian Refineries.....	34,835	38,567
Matte treated in Canadian refineries.....	37,613	38,352
<b>Silver-Cobalt-Nickel—</b>		
Ores treated.....	523	1,038
Concentrates treated.....	3,032	2,311
Residues treated.....	1,698	852
Other material.....		28
<b>Copper-Lead-Zinc—</b>		
Copper, ores and concentrates.....	861,847	850,932
Lead ores.....	18,036	34,517
Lead concentrates.....	118,978	158,021
Gold ores (imported).....	14,677	18,137
Zinc residues.....	53,253	77,521
Other ores.....	571	938
Zinc ore.....	1,270	1,980
Zinc concentrates.....	86,768	123,760
“ ore (imported).....		18

Table 282.—Summary of Expenditures in Metallurgical Works in Canada, 1924 and 1925

Item	1924	1925
	\$	\$
Estimated cost of ores, etc., treated, in silver-cobalt smelters.....	2,208,812	2,045,803
Estimated cost of ores, etc., treated, in nickel-copper smelters.....	3,923,082	3,776,547
Estimated cost of ores, etc., treated, in copper, lead and zinc smelters.....	14,262,641	21,507,059
Total salaries and wages.....	8,136,251	8,568,997
Cost of fuel and electricity.....	*4,765,483	5,280,674
Miscellaneous expenses.....	6,884,890	5,740,829
<b>Total.....</b>	<b>40,181,159</b>	<b>46,919,909</b>

\* Includes \$945,404 expended for electric power in 1924 and \$1,232,120 in 1925.

Table 283.—Products Sold by the Metallurgical Works in Canada, 1925

Industry and Material	Sold	
	Quantity	Value
		\$
<b>NICKEL-COPPER SMELTERS AND REFINERIES—</b>		
Matte..... tons	32,397	7,884,661
Nickel, nickel oxide and copper.....		12,654,759
Residues containing gold, silver, platinum, palladium, etc.....		1,852,105
<b>Total.....</b>		<b>22,391,525</b>
<b>SILVER-COBALT SMELTERS AND REFINERIES—</b>		
Silver bullion (fine)..... fine oz.	2,813,071	1,985,755
Arsenic As <sub>2</sub> O <sub>3</sub> ..... lb.	2,005,252	108,789
Cobalt metal, oxide, salts (metal content)..... lb.	823,019	2,114,835
Nickel metal, oxide, salts (metal content)..... lb.	441,326	91,462
Speiss residues exported..... tons	541	211,991
Copper sulphate..... lb.	13,834	692
Silver-lead-bismuth-bullion..... lb.	98,714	103,638
Cleanup material..... tons	29	32,205
<b>Total.....</b>		<b>4,649,367</b>
<b>COPPER-LEAD-ZINC SMELTERS—</b>		
Blister copper, refined copper and copper sulphate (copper content)..... lb.	30,677,523	4,702,349
Gold..... fine oz.	18,441	379,394
Silver..... “	4,068,072	2,810,253
Lead and zinc and lead bullion and zinc residues.....		21,700,905
<b>Total.....</b>		<b>29,592,901</b>
<b>Total Sales.....</b>		<b>56,633,793</b>

## NON-METALLIC MINERAL INDUSTRIES

## ASBESTOS

The eastern townships area in the province of Quebec supplies about 85 per cent of the world's production of asbestos. Rhodesia, the second producer, markets only the longer fibre stocks, and is therefore an important competitor, as Canadian mines ship both long and short fibre. The Union of South Africa and Russia have also become more important sources of supply, particularly to European markets. In South Africa, the Transvaal production consists principally of chrysotile, although small quantities of amosite (long fibre) and crocidolite (blue) are also produced; the Cape production is exclusively crocidolite. Cyprus, Italy, the United States, China and Australia also produce small tonnages of asbestos.

Asbestos, owing to its fibrous structure and to the fact that it will not burn, finds many uses as a fireproofing material, particularly in felts, sheets, theatre-drop curtains, mitts, etc., and also as a principal component of roofings, shingles, pipe-coverings, brake linings and wall board, to mention only a few of the better-known uses. In the 1921 issue of this report, there was a description of the method used in grading asbestos in the Quebec mills.

The industry in Canada was represented in 1925 by 14 firms. The amount of capital employed, comprising the value of lands, buildings, plant equipment, cost of materials and supplies on hand at the end of the year, and working capital including cash balances and bills receivable, was \$38,133,046.

Employment was furnished to 2,582 persons including 117 salaried employees, and the total disbursements in salaries and wages amounted to \$2,997,107. The peak of employment was in November, when 2,661 men were on the rolls.

United States asbestos operators reported a production of 1,123 long tons in 1925. The Rhodesian output in 1925 advanced to a record total for this country of 30,669 long tons, while the quantity of asbestos produced in the Union of South Africa increased slightly to a total of 9,078 long tons.

One of the most valuable developments in the asbestos industry was brought about by the incorporation of the new company which merged many of the segregated operators in Quebec. The Asbestos Corporation, Ltd., obtained a federal charter in November, 1924, under which it acquired control of the following companies: Asbestos Corporation of Canada, Limited; Consolidated Asbestos Limited (owning the Thetford, Belmina and Berlin mines); Federal Asbestos Company; Asbestos Mines Limited; Thetford-Vimy Limited; Maple Leaf Asbestos Corporation Limited; and the Black Lake Asbestos and Chrome Company, Limited. The provisions of this charter, which became operative on January 1, 1926, give the company power to conduct operations throughout Canada.

Table 284.—Principal Statistics of the Asbestos Industry in Canada, 1921-1925

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	15	41,357,161	2,694	2,657,425	318,633	2,713,440	4,906,230
1922.....	12	43,997,252	2,572	2,581,644	265,962	2,704,462	5,552,723
1923.....	14	42,715,557	3,165	3,607,178	442,450	2,524,610	7,522,506
1924.....	15	43,216,966	2,597	2,977,304	293,533	2,173,991	6,710,830
1925.....	14	38,133,046	2,582	2,997,107	377,064	(*)	8,988,360

(\*) Data not available.

Table 285.—Capital Employed in the Asbestos Industry in Canada, 1923, 1924 and 1925

	1923	1924	1925
	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—			
Cost of lands, buildings, plant machinery and tools.....	36,234,918	37,286,894	33,066,779
Cost of supplies and stock on hand.....	2,965,687	2,437,151	1,907,057
Cash, trading and operating accounts and bills receivable.....	3,514,952	3,492,921	3,159,210
<b>Total.....</b>	<b>42,715,557</b>	<b>43,216,966</b>	<b>38,133,046</b>

Table 286.—Employees, Salaries and Wages in the Asbestos Industry in Canada, 1924 and 1925

	1924				1925			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES—Total.....	115	10	125	288,459	107	10	117	280,085
WAGE-EARNERS—								
Mine.....	1,429		1,429	2,688,845	1,315		1,315	2,717,022
Mill.....	1,043		1,043		1,150		1,150	
Total.....	2,472		2,472	2,688,845	2,465		2,465	2,717,022
Grand Total.....	2,587	10	2,597	2,977,304	2,572	10	2,582	2,997,107

Table 287.—Number of Wage-Earners in the Asbestos Industry in Canada by Months, 1924 and 1925

Month	1924		1925		Month	1924		1925	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
January.....	1,404	1,046	1,055	1,004	July.....	1,308	947	1,267	1,184
February.....	1,429	1,037	1,018	1,027	August.....	1,189	1,014	1,326	1,197
March.....	1,577	1,119	1,051	1,033	September.....	1,242	909	1,288	1,194
April.....	1,808	1,186	1,063	1,035	October.....	1,244	1,005	1,342	1,233
May.....	1,806	1,223	1,054	1,068	November.....	1,248	1,028	1,389	1,272
June.....	1,519	1,079	1,213	1,170	December.....	1,255	1,008	1,323	1,223
Average for 1924.....									2,472
Average for 1925.....									2,465

Table 288.—Monthly Average Prices of Asbestos by Grades, 1924 and 1925

(Price per short ton)

(Computed from quotations in the *Engineering and Mining Journal*)

Month	Crude No. 1	Crude No. 2	Spinning fibres	Magnesia and compressed sheet fibres	Shingle stock	Paper stock	Cement stock	Floats stock
1924	\$	\$	\$	\$	\$	\$	\$	\$
January.....	388	225	113	75	60	35	19	9
February.....	350	200	108	75	60	36	23	8
March.....	350	200	118	75	60	37	23	8
April.....	350	200	118	75	60	37	23	9
May.....	350	200	118	75	60	37	23	11
June.....	363	213	120	85	60	38	23	10
July.....	363	213	120	85	60	38	23	10
August.....	350	188	120	76	57	35	18	10
September.....	313	175	108	70	50	33	20	9
October.....	350	175	108	65	50	35	20	11
November.....	350	175	108	65	50	35	20	11
December.....	313	195	108	65	48	33	20	11
Average.....	349	197	114	74	56	36	21	10
1925								
January.....	363	195	108	78	50	38	20	11
February.....	363	225	125	83	50	38	20	11
March.....	388	238	137	83	50	38	20	11
April.....	400	275	158	90	60	38	20	11
May.....	410	265	152	90	60	38	20	11
June.....	413	263	150	90	60	38	20	11
July.....	450	263	155	90	63	38	10	11
August.....	450	273	161	98	65	39	11	10
September.....	425	275	163	95	63	40	10	10
October.....	425	275	143	93	63	40	10	10
November.....	450	275	175	125	60	40	25	.....
December.....	475	288	188	125	70	43	25	.....
Average.....	418	259	151	95	60	39	18	11

## COAL

Canada's coal reserves are estimated to constitute more than 16 per cent of the world's known available supply and most of these deposits are located in the western provinces although coal of good quality has been mined in the maritime provinces for a great many years, and it is probable that operations in that field will be continued for many years to come.

In 1925, there were 511 coal mines operated in Canada, of which 353 were in Alberta, 55 in Saskatchewan, 47 in Nova Scotia, 16 in New Brunswick, 39 in British Columbia, and 1 in the Yukon.

The total capital employed by these mines amounted to \$145,006,440, of which 54.1 million dollars was invested in Nova Scotia mines; 53.1 million dollars in Alberta mines and 32.9 million dollars in British Columbia properties.

Owing largely to labour troubles in the eastern coal mines, the average number of employees on Canadian coal mine staffs in 1925 dropped to 25,032 as compared with an average of 27,183, for the preceding year. Salaries and wages showed a fall of almost 2 million dollars to \$33,200,309 as compared with \$35,123,490 in 1924. The fluctuations in coal-mine employment as shown in the dominion total, corresponded almost exactly with the changes observed in employment in the eastern mines. In Nova Scotia, the average number employed during the year dropped to 8,853 as compared with 12,994 on the rolls in 1924; Alberta's average was 9,345 as against 7,783 in the preceding year. British Columbia mines employed 5,622 men as compared with 5,203 in the preceding year.

Closely related in point of interest to the number of employees, are the data concerning the number of days' work done and the wages paid. In 1925, excluding the salaried employees, there were 23,490 men working in the coal mines of Canada; of these 5,787 worked on the surface, and 17,703 underground. Surface men worked on the average 261 days during the year; underground men, 221 days. The total number of man-days' work done during the year was 5,429,531; this number divided into the total sum of wages paid during the year, showed average earnings per man, of \$5.51 per working day. In 1924, the average computed on the same basis was \$5.62 per day and in 1923 it was \$5.57.

**Table 289.—Capital Employed in the Coal Mines of Canada by Provinces as at December 15, 1924 and 1925**

Province	1924				1925			
	Capital employed as represented by				Capital employed as represented by			
	Cost of lands buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash trading and operating accounts and bills receivable	Total	Cost of lands buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	48,096,232	3,108,035	3,503,977	54,708,244	47,691,027	2,660,857	3,797,594	54,149,478
New Brunswick...	1,242,828	43,236	522,290	1,808,354	1,229,267	33,348	459,961	1,722,576
Saskatchewan.....	2,545,523	59,384	297,913	2,902,820	2,543,226	58,990	224,621	2,826,837
Alberta.....	44,474,725	1,152,713	7,075,493	52,702,931	44,946,996	1,101,274	7,069,303	53,117,573
British Columbia.	31,896,185	774,181	1,716,316	34,386,682	30,474,850	768,744	1,743,582	32,987,176
Yukon.....	202,500	.....	.....	202,500	202,500	300	.....	202,800
<b>Canada.....</b>	<b>128,457,993</b>	<b>5,137,549</b>	<b>13,115,989</b>	<b>146,711,531</b>	<b>127,087,866</b>	<b>4,623,513</b>	<b>13,295,061</b>	<b>145,006,440</b>

Table 290.—Number of Employees, Salaries and Wages Paid in the Coal Mines in Canada, by Provinces, 1925

Province	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Surface	Under-ground				
Nova Scotia.....	486	34	1,644	6,689	8,853	\$ 965,997	\$ 10,707,656	\$ 11,673,653
New Brunswick.....	24	2	146	468	640	59,036	536,871	595,907
Saskatchewan.....	47	4	125	392	568	85,305	471,546	556,851
Alberta.....	630	29	2,248	6,438	9,345	1,496,981	10,980,196	12,477,177
British Columbia.....	265	21	1,623	3,713	5,622	694,494	7,199,205	7,893,699
Yukon.....			1	3	4		3,022	3,022
Canada.....	1,452	90	5,787	17,703	25,032	3,301,513	29,898,496	33,200,309

Table 291.—Number of Wage-Earners in the Coal Mines of Canada by Months and by Provinces, 1924 and 1925

Month	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
January.....1924	13,144	603	728	12,047	5,978		32,500
.....1925	12,233	642	755	11,938	5,494		31,062
February.....1924	12,928	621	636	11,234	6,023		31,442
.....1925	12,223	632	647	10,440	5,504		29,446
March.....1924	13,253	649	537	9,614	5,682		29,735
.....1925	9,327	570	547	8,648	5,428		24,520
April.....1924	13,371	622	420	2,650	4,350		21,413
.....1925	2,448	620	369	6,717	5,355	4	15,513
May.....1924	13,051	629	376	2,758	4,260		21,074
.....1925	2,330	628	300	6,216	5,014	4	14,492
June.....1924	12,721	612	380	2,978	4,205		20,896
.....1925	2,325	651	309	6,634	5,072	4	14,995
July.....1924	11,587	624	327	2,879	4,234	2	19,657
.....1925	2,422	619	324	6,247	5,188	4	14,804
August.....1924	11,476	570	336	3,716	4,227	2	20,331
.....1925	9,935	627	309	7,069	5,213	4	23,157
September.....1924	11,753	585	386	4,911	4,314	2	21,955
.....1925	11,398	589	431	8,590	5,308	4	26,320
October.....1924	12,199	577	574	10,078	5,180		28,608
.....1925	11,595	588	713	9,682	5,360		27,938
November.....1924	12,317	598	757	11,090	5,039		29,801
.....1925	11,938	590	768	10,862	5,514		29,672
December.....1924	12,201	613	766	12,008	5,503		31,091
.....1925	11,831	617	727	11,181	5,582		29,938
Average.....1924	12,500	608	519	7,163	4,916	2	25,708
.....1925	8,333	614	517	8,686	5,336	4	23,490

Table 292.—Average Number of Wage-Earners, Employed in the Coal Mines of Canada, by Classes and by Provinces, 1925

Classification	Province						Canada		
	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Surface	Under-ground	Total
<b>SURFACE—</b>									
Administration.....	82	14	9	108	37		223	27	250
Foremen and clerks.....	119	22	17	212	116		470	16	486
Screenmen and loaders.....	383	15	39	582	182		1,199	2	1,201
<b>UNDERGROUND—</b>									
Officials.....	290	2	12	333	159		7	786	796
Hand cutters and helpers.....	1,536	407	250	2,440	1,759	3	10	6,388	6,395
Machine cutters.....	807	9	12	367	48			1,243	1,243
Machine loaders and helpers.....	988	13	38	1,304	92		2	2,433	2,435
Horse haulage employees.....	493	2	46	636	407		37	1,547	1,584
Mechanical haulage employees.....	919		2	328	365		61	1,552	1,614
Ventilation employees.....	233		1	89	54		5	372	377
Roamakers.....	179	3	15	170	104		4	467	471
Timbermen.....	398	17	6	288	173		17	865	882
Pumpmen.....	99	5	6	51	47		11	197	208
<b>MISCELLANEOUS—</b>									
Engineers.....	166	12	12	172	87	1	436	14	450
Firemen.....	133	3	12	117	70		335		335
Machinists.....	180	1	2	74	77		328	6	334
Carpenters and masons.....	85	3	5	71	80		243	1	244
Other mechanics.....	146	3	2	119	136		304	102	406
All other white employees.....	1,097	83	31	1,225	837		1,835	1,438	3,273
Japanese.....					88		24	64	83
Chinese.....					416		235	181	416
Indians.....					2		1	1	2
<b>Total.....</b>	<b>8,333</b>	<b>614</b>	<b>517</b>	<b>8,686</b>	<b>5,336</b>	<b>4</b>	<b>5,787</b>	<b>17,703</b>	<b>23,490</b>

Table 293.—Number of Wage-Earners, Work Done by Months, and Wages Paid in the Coal Mines of Canada, 1925

Month	Number of employees			Days' work done			Total wages
	Surface	Under-ground	Total	Surface	Under-ground	Total	
January.....	6,987	24,075	31,062	153,946	428,359	582,305	\$
February.....	6,635	22,811	29,446	126,481	344,964	471,445	Monthly records not available
March.....	6,049	18,471	24,520	100,695	230,847	331,542	
April.....	4,456	11,057	15,513	91,116	175,490	266,606	
May.....	4,311	10,181	14,492	93,123	188,442	281,565	
June.....	4,416	10,579	14,995	103,346	215,754	319,100	
July.....	4,290	10,514	14,804	105,269	220,120	325,389	
August.....	5,881	17,276	23,157	127,239	316,853	444,092	
September.....	6,312	20,008	26,320	136,112	387,681	523,793	
October.....	6,503	21,435	27,938	157,978	474,287	632,265	
November.....	6,798	22,874	29,672	159,917	481,262	641,179	
December.....	6,819	23,119	29,938	155,617	454,633	610,250	
Total.....				1,510,839	3,918,692	5,429,531	29,898,496
Average.....	5,787	17,703	22,490	261 days per year	221 days per year	231 days per year	\$ 5.51 per day

Table 294.—Power Employed in the Coal Mines of Canada, by Provinces, 1925

	Nova Scotia		New Brunswick		Saskatchewan		Alberta		British Columbia		Canada	
	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated	No. of units	Total H.P. rated
Stationary engines (including those used for hoisting, pumping, etc.)—												
Steam engines and turbines.....	112	60,535	15	873	33	1,700	258	29,593	121	20,582	539	113,283
Gas engines.....							24	106			24	106
Oil and gasoline engines.....	3	26			5	20	28	234	4	81	40	361
Hydraulic turbines or water wheels.....									2	12,000	2	12,000
Electric motors:—												
Operated by power generated by the establishment.....	260	26,231	24	373	15	289	258	6,973	203	14,106	760	47,972
Operated by purchased power.....	122	2,759			3	18	343	14,529			468	17,306
Boilers installed.....	159	42,615	10	865	13	1,630	185	20,852	91	13,590	458	79,552
Electric power used during the year—												
Quantity in kilowatt-hours.....		53,669,155		1,150,000		203,600		22,830,419		18,867,270		96,720,444
Value.....\$		763,648		30,169		4,120		506,919		266,100		1,570,956

## FELDSPAR

The first record of production in the feldspar industry in Canada dates back to about the year 1890. Production during that year was approximately 700 tons; since that date the records show an increase until in 1924 the maximum production of 44,804 tons was reached.

Development work in this industry was first done on deposits located in Templeton and Hull townships, in the province of Quebec. In the townships of Bedford and Portland, Ontario, near Bedford and Verona, development work was started on large feldspar deposits in 1900. The activities of these Ontario feldspar properties during the next few years, owing to their proximity to the American market (potteries located in New Jersey), were responsible for the almost complete cessation of work on Quebec deposits. A small quantity of high-grade dental spar has been produced from the Villeneuve quarry in Portland township, Quebec, for a number of years.

Plants for the fine-grinding of feldspar in Canada are located at Kingston, Toronto and Oshawa; the first two establishments were operated during 1925, producing about 1,800 tons of ground spar. The grinding capacity of these two plants is approximately 7,500 tons per annum.

Although feldspar occurs in many deposits throughout Canada, operations in this industry in 1925 were confined to the provinces of Ontario and Quebec. A large percentage of the Canadian output is shipped to United States grinding plants in the form of crude spar for use in the ceramic industry.

Twenty-three firms reported operations in 1925, comprising 9 in Quebec and 14 in the province of Ontario.

The feldspar situation in the United States is summed up in the following excerpt from the Department of Commerce report "*Feldspar in 1925*":

"The production of crude spar in 1925, following overproduction in 1924, and in spite of smaller imports, decreased 9 per cent. The quantity of ground spar sold by merchant mills, on the other hand, increased considerably—12 per cent—but the average value per ton of both crude and ground domestic spar was lower than in 1924. Several mills were added to the already growing list, and the addition of further grinding plants is promised for 1926. The value of the total output of ground feldspar increased 10 per cent compared with 1924.

"Imports of crude feldspar decreased in even greater proportion than did production. In 1925 they constituted less than one-eighth of the total supply of feldspar."

**Table 295.—Principal Statistics of the Feldspar Industry in Canada, 1921-1925**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	23	484,633	143	146,776	4,237	55,628	230,754
1922.....	25	388,310	225	127,182	5,231	60,829	248,402
1923.....	25	948,973	298	193,001	13,965	55,542	237,601
1924.....	25	953,525	290	223,937	16,866	*	358,540
1925.....	23	712,329	240	165,766	11,141	*	235,789

(\*) Data not available.

**Table 296.—Capital Employed in the Feldspar Industry in Canada, 1924 and 1925**

	1924	1925
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY:		
Cost of lands, buildings, plant machinery and tools.....	890,337	648,400
Cost of supplies and stock on hand.....	38,534	18,430
Cash, trading and operating accounts and bills receivable.....	24,654	45,499
<b>Total.....</b>	<b>953,525</b>	<b>712,329</b>

**Table 297.—Employees, Salaries and Wages in the Feldspar Industry in Canada, 1924 and 1925**

	Year	Number			Salaries and wages
		Male	Female	Total	
SALARIED EMPLOYEES—Total.....	1924	9	1	10	\$ 20,580
	1925	11	.....	11	19,507
WAGE-EARNERS—Total.....	1924	280	.....	280	203,357
	1925	229	.....	229	146,259
<b>Grand total.....</b>	<b>1924</b>	<b>289</b>	<b>1</b>	<b>290</b>	<b>223,937</b>
	<b>1925</b>	<b>240</b>	.....	<b>240</b>	<b>165,766</b>

Table 298.—Number of Wage-Earners in the Feldspar Industry in Canada, by Months, 1924 and 1925

Month	Number		Month	Number	
	1924	1925		1924	1925
January.....	218	153	July.....	298	197
February.....	205	204	August.....	276	188
March.....	191	214	September.....	240	158
April.....	176	127	October.....	251	182
May.....	247	177	November.....	220	211
June.....	279	211	December.....	166	173
Average for 1924.....					280
Average for 1925.....					229

## GYPSUM

The first record of the production of gypsum in Canada shows that in 1822 minor operations, consisting of the extraction of a few tons of this commodity for use as fertilizer, were conducted on a bed of gypsum near Paris, Ontario. The first mill for manufacturing gypsum was erected in 1823. Since that date operations in this district have been carried on almost continuously. At the present time the Ontario Gypsum Company, operating at Lythmore and Caledonia, is the only producer.

Prior to 1833, activities in the gypsum industry in Nova Scotia consisted principally of minor operations carried on by individual producers. The crude material was shipped to mills located in the United States. Several attempts were made by local producers to work up the crude rock, but these were not successful owing to the almost total dependence on the American market, and when the United States duty on imports was made prohibitive, all local milling operations ceased. In Nova Scotia the deposits now being worked, in Hants and Victoria counties, yielded 74.4 per cent of the total Canadian production in 1925. The major portion of the gypsum quarried, is shipped as crude material to the United States where it is in demand, as products from Nova Scotia gypsum are considered superior to those produced from the general run of United States rock. Advantageous locations, with nearby rail and seaboard facilities, assisted materially in the continued expansion of this industry in Nova Scotia.

The centre of activities in the gypsum industry in New Brunswick is near Hillsborough, Albert county. Operations have been carried on in this district since 1847. In 1854 there was a change in the ownership of the quarries, and shortly after this date a plaster mill was erected to supply both local and export trade. At the present time only one company is carrying on operations in this district. Very pure quality gypsum is produced from the Hillsborough deposits; products made from this material consist of hard wall plaster, finishing plaster and dental plaster of different grades. In addition to shipments to the Canadian markets, considerable quantities are exported to the United States, Australia and New Zealand.

Developments in the gypsum industry in Manitoba are of comparatively recent date, the year 1901 marking the first active work on deposits in the province. The Manitoba Union Mining Company in that year erected a crushing and calcining mill at the head of Portage bay on lake Manitoba. In 1925, the production of gypsum from the deposit at Gypsumville, Manitoba, increased approximately 20 per cent.

In Ontario and Manitoba the raw gypsum was used in 1925, mainly in the manufacture of cement, wall plaster, wall-board, fireproof tile and blocks, and plaster of paris. The British Columbia product was sold as land plaster for agricultural purposes.

Comparative figures for the capital employed by operating gypsum companies in 1924 and 1925 are shown in the following table. As Ontario, Manitoba, and British Columbia were each represented by only one operator, statistics regarding the companies in these provinces have been combined.

Table 299.—Principal Statistics of the Gypsum Industry in Canada, 1921-1925

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	11	3,849,776	1,039	774,551	116,554	565,839	1,785,538
1922.....	13	4,092,090	1,055	909,072	127,246	436,705	2,160,898
1923.....	15	4,249,628	1,225	1,017,556	190,906	552,990	2,243,100
1924.....	14	4,423,697	1,219	1,114,468	141,818	458,268	2,208,108
1925.....	15	4,506,995	1,039	1,018,585	131,790	*	2,389,891

\*Data not available.

Table 300.—Capital Employed in the Gypsum Industry in Canada by Provinces, 1924 and 1925

	1924				1925		
	Nova Scotia	New Brunswick	Ontario, Manitoba and British Columbia	Canada	Nova Scotia	New Brunswick, Ontario, and Manitoba	Canada
	\$	\$	\$	\$	\$	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>							
Cost of lands, buildings, plant machinery and tools.....	1,999,854	444,364	1,356,767	<b>3,800,985</b>	2,132,294	1,705,235	<b>3,837,529</b>
Cost of all materials and supplies on hand.....	168,500	94,335	126,771	<b>359,606</b>	134,096	216,672	<b>350,768</b>
Cash, trading and operating accounts and bills receivable....	51,586	30,553	150,967	<b>233,106</b>	62,999	255,699	<b>318,698</b>
<b>Total.....</b>	<b>2,219,940</b>	<b>569,252</b>	<b>1,634,505</b>	<b>4,423,697</b>	<b>2,329,389</b>	<b>2,177,606</b>	<b>4,506,995</b>

Table 301.—Employees, Salaries and Wages in the Gypsum Industry in Canada, 1924 and 1925

	1924				1925			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
<b>SALARIED EMPLOYEES—</b>				\$				\$
Total.....	49	9	58	126,306	41	10	51	127,417
<b>WAGE-EARNERS—</b>								
Mine.....	913		913	988,162	726		726	891,168
Mill.....	248		248		262		262	
Total.....	1,161		1,161	988,162	988		988	891,168
<b>Grand total.....</b>	<b>1,210</b>	<b>9</b>	<b>1,219</b>	<b>1,114,468</b>	<b>1,029</b>	<b>10</b>	<b>1,039</b>	<b>1,018,585</b>

Table 302.—Average Number of Wage-Earners in the Gypsum Industry in Canada by Provinces 1925,

Month	Nova Scotia		New Brunswick		Ontario		Manitoba		Canada	
	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill
January.....	186	33	75	70	61	62	30	51	352	216
February.....	197	34	70	72	52	77	12	61	331	244
March.....	176	37	94	72	77	75	17	59	364	243
April.....	503	41	95	75	74	83	19	60	691	259
May.....	678	49	95	80	81	77	48	60	902	266
June.....	720	54	105	85	55	63	45	57	925	259
July.....	698	56	84	93	56	79	18	75	856	303
August.....	743	56	75	92	57	68	18	73	893	289
September.....	728	53	65	90	61	66	17	54	871	263
October.....	621	51	60	82	57	65	16	52	754	250
November.....	670	45	50	77	42	56	14	50	776	225
December.....	603	39	50	80	44	56	7	45	704	220
<b>Average.....</b>	<b>558</b>	<b>47</b>	<b>76</b>	<b>81</b>	<b>70</b>	<b>76</b>	<b>22</b>	<b>58</b>	<b>726</b>	<b>262</b>

## MICA

Important deposits of mica in Canada are located in the counties of Hull and Labelle in Quebec, and Lanark, Leeds and Frontenac in Ontario. The product of these mines, in the main part, is shipped first to mica-trimming shops, conveniently located, where it is either rough-cobbed or split and trimmed prior to exportation to the United States or Great Britain.

Large quantities of scrap mica were shipped to the United States to be ground for use in the manufacture of prepared roofings. According to a survey made in 1923, the consumption of mica by Canadian industries in that year, was as follows: roofing materials, 359 tons; wallpaper, 200 tons; electrical goods, 31 tons; and rubber, 22 tons.

Thirty-six operators in Canada reported shipments of mica during 1925. Of this number 21 were in Quebec, and 15 in Ontario.

Statistics relating to the extensive mica-trimming shops in Ontario and Quebec have not been included in this report, but have been treated under a separate heading in the report on *Manufactures of Non-Metallic Minerals*.

India, United States, Canada, South Africa and Madagascar are the principal mica-producing countries. Only muscovite is produced in each of the first two countries; the Canadian output consists of phlogopite, while the Madagascar production is made up of one-fifth muscovite and the balance phlogopite. It will be seen that the last named country is Canada's chief competitor. Phlogopite or amber mica is used in the construction of electrical equipment in preference to muscovite.

Table 303.—Principal Statistics of the Mica Industry in Canada, 1921-1925

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	20	576,237	104	74,432	4,354	19,743	70,063
1922.....	20	441,802	147	64,641	1,807	45,825	152,263
1923.....	33	223,650	219	112,469	4,772	60,216	326,974
1924.....	50	249,876	223	127,201	5,532	(*)	357,272
1925.....	36	190,144	269	123,079	4,528	(*)	261,463

(\*) Data not available.

Table 304.—Capital Employed in the Mica Mining Industry in Canada by Provinces, 1924 and 1925

	1924			1925		
	Quebec	Ontario	Canada	Quebec	Ontario	Canada
	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—						
Cost of lands, buildings, plant machinery and tools.....	29,621	32,078	61,699	61,638	27,134	88,772
Cost of all materials and supplies on hand....	49,003	67,822	116,825	15,184	54,493	69,677
Cash, trading and operating accounts and bills receivable.....	45,759	25,593	71,352	21,708	9,987	31,695
<b>Total.....</b>	<b>124,383</b>	<b>125,493</b>	<b>249,876</b>	<b>98,530</b>	<b>91,614</b>	<b>199,144</b>

Table 305.—Number of Wage-Earners, by Months and Wages Paid in the Mica Industry in Canada, 1924 and 1925

Month	Number		Month	Number	
	1924	1925		1924	1925
January.....	192	131	July.....	196	267
February.....	175	137	August.....	179	277
March.....	177	146	September.....	155	278
April.....	192	138	October.....	130	245
May.....	198	198	November.....	142	207
June.....	199	240	December.....	146	183

Average for 1924.....	220	Total wages paid in 1924.....	\$	124,668
Average for 1925.....	260	Total wages paid in 1925.....	\$	110,753

## NATURAL GAS

No records are available prior to 1892, as to the production of natural gas in Canada. An estimate of the value of gas produced during that year placed the total at \$150,000.

The extensive developments of the oilfields in Ontario made available for consumption large quantities of natural gas. From 1892 to 1902 inclusive, Ontario was the only contributor of this commodity. In 1903, the first production from other provinces was recorded. The value of natural gas produced during 1903 was approximately \$202,000 and from that year onward there was an annual increase in production until in 1917, the total value was \$5,045,298. From that date until 1922, considerable decreases in valuation were recorded. In 1925, the total value of the natural gas produced in this province amounted to \$3,958,006.

The principal producing fields in Alberta, during 1925 were the Medicine Hat; Bow Island (about 40 miles west of Medicine Hat); Viking field (80 miles southeast of Edmonton) and the Turner Valley field (about 35 miles southwest of Calgary). The total number of well reported as producing at the end of the year was 81, as compared with 70 wells reported active in 1924.

Interest has been mainly centred around the developments in the Turner Valley field. The Royalite Company, operating in this field, completed a new 10-in. pipe line to Calgary for the transmission of natural gas. This gas is passed through a scrubbing plant at the field before delivery to the pipe line. A peak load of fourteen million feet per day is assured the consumers in Calgary.

The producing wells in the province of New Brunswick are confined to the Stony Creek field in Albert county, about eight miles south of Moncton. The natural gas produced is used largely for power, domestic heating and lighting purposes in Moncton. At the end of 1925 there were 32 wells in operation, 6 more than were reported active at the beginning of the year.

Table 306.—Principal Statistics of the Natural Gas Industry in Canada, 1921-1925

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$
1921.....	103	2,021	30,368,478	885	882,907	1,405,222	4,594,164
1922.....	132	1,981	31,373,817	921	939,194	1,458,675	5,846,501
1923.....	192	2,060	38,722,854	867	1,050,366	1,789,097	5,884,618
1924.....	186	2,031	50,561,757	1,240	1,315,405	(a)	5,708,636
1925.....	161	2,236	48,895,802	1,059	1,206,875	(a)	6,833,005

(a) Data not available.

Table 307.—Capital Employed in the Natural Gas Industry in Canada by Provinces, 1924 and 1925

	1924				1925			
	New Brunswick	Ontario	Alberta	Canada	New Brunswick	Ontario	Alberta	Canada
	\$	\$	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—								
Cost of lands, buildings, plant machinery and tools.....		22,279,988	22,026,163	44,306,151		22,539,124	18,709,542	41,248,666
Cost of all materials and supplies on hand.....		369,970	531,612	901,582		467,725	515,382	983,107
Cash, trading and operating accounts and bills receivable.....		2,131,765	2,960,648	5,092,413		3,104,538	3,293,491	6,398,029
<b>Total</b> .....	<b>261,611</b>	<b>24,781,723</b>	<b>25,518,423</b>	<b>50,561,757</b>	<b>266,000</b>	<b>26,111,387</b>	<b>22,518,415</b>	<b>48,895,802</b>

\*Includes data for New Brunswick.

Table 308.—Employees, Salaries and Wages in the Natural Gas Industry in Canada, 1924 and 1925

	1924				1925			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES—Total.....	395	65	460	503,461	327	82	409	497,741
WAGE-EARNERS—Total.....	780		780	811,944	650		650	709,134
<b>Grand total.....</b>	<b>1,175</b>	<b>65</b>	<b>1,240</b>	<b>1,315,405</b>	<b>977</b>	<b>82</b>	<b>1,059</b>	<b>1,206,875</b>

Table 309.—Number of Wage-Earners in the Natural Gas Industry in Canada, by Months and by Provinces, 1925

Month	New Brunswick	Ontario	Alberta	Canada
January.....	8	280	175	463
February.....	8	274	149	431
March.....	21	287	192	500
April.....	30	344	258	632
May.....	28	343	264	635
June.....	29	405	351	785
July.....	28	430	323	781
August.....	26	426	283	735
September.....	26	438	325	789
October.....	25	399	284	708
November.....	24	407	190	621
December.....	21	357	181	559
<b>Average.....</b>	<b>23</b>	<b>381</b>	<b>246</b>	<b>650</b>

Table 310.—Number of Gas Wells in Canada, by Provinces, 1924 and 1925

	New Brunswick	Ontario	Manitoba	Alberta	Canada
Productive wells at beginning of year.....	1924 21 1925 26	1,975 1,934	1 1	63 70	2,060 2,031
Number of productive wells drilled.....	1924 5 1925 6	62 75	..... .....	9 5	76 86
Number of dry wells drilled.....	1924 ..... 1925 ..... .....	20 22	..... .....	..... 1	20 23
Number of wells abandoned.....	1924 ..... 1925 ..... .....	83 176	..... .....	..... 3	83 179
Productive wells at end of year.....	1924 26 1925 32	1,934 2,117	1 1	70 86	2,031 2,236

Table 311.—Natural Gas Wells in Ontario, by Townships, 1925

Township	No. of producing wells in operation Dec. 31, 1925	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Amabel.....	2			
Bayham.....	43	9		
Bertie.....	91			
Binbrook.....	49	14		
Caistor.....	35	5		
Canboro.....	142	17		
Cayuga, North.....	65	4	2	14
Cayuga, South.....	58	4	1	4
Charlotteville.....	16			
Crowland.....	50			
Dawn.....	5			
Dorchester, North.....	3			
Dover, West.....	6	2	1	
Dunn.....	14	3	2	3
Enniskillen.....	3			
Euphemia.....	6			
Gainsboro.....	5			3
Glanford.....	23	2		
Gosfield South.....	10			3
Houghton.....	3			
Humberstone.....	96	2	1	3
Mersea.....	3	1		
Middleton.....	26	1	3	8
Malahide.....	2			
Moulton.....	113	7	3	4
Oakland.....	1			
Onesida.....	28	6	1	
Onondaga.....	32	5		2
Rainham.....	97	20	3	13
Raleigh.....	18	2		
Romney.....	102	3		2
Sarnia.....	14			
Seneca.....	136	31		
Sherbrooke.....	13			
Tilbury, East.....	135	9		5
Townsend.....	1			1
Wainfleet.....	42	4	1	2
Walpole.....	146	17	3	6
Walsingham, North.....	6			
Walsingham, South.....	13			2
Windham.....	4			
Willoughby.....	39		1	
Woodhouse.....	53	7	1	
Private wells (estimated).....	300			
Surface wells.....	69			
<b>Total.....</b>	<b>2,117</b>	<b>176</b>	<b>22</b>	<b>75</b>

## PETROLEUM

Petroleum production in Canada dates back to 1857 when a shallow well was dug near Enniskillen (now known as Oil Springs), in the province of Ontario. Early in January, 1862, a pioneer oil prospector brought in the first flowing well at Oil Springs, Ontario, and before the fall of the same year there were approximately 35 producing wells in operation. According to available information some of these wells produced 3,000 to 6,000 barrels per day.

In 1865, Petrolia came into existence as a large producer and since that date has maintained its position among the leading oil-fields in Canada. Prior to this discovery, oil deposits were located in Kent County, at Bothwell. Although Petrolia, Oil Springs and Bothwell are by far the oldest producing fields in Canada, these three fields continue to rank as the premier producers in Ontario.

On December 31, 1925, there were 2,862 wells in operation in Ontario, while at the close of the previous year, 2,456 wells were active.

The first attempt to develop the oil deposits in Westmoreland county in New Brunswick, was made in 1859. The four wells drilled then were not successful as fresh water seeped in, ruining them. No further drilling was attempted until 1879, then two more wells were sunk, one at St. Joseph and the other at Dover. From 1900 to 1906 some 72 wells were drilled, as follows: 67 in Westmoreland county, 4 in Albert county and 1 in Kent county. This marked the opening up of the present Stony Creek oil and gas field. Fourteen petroleum wells were in operation in this district on December 31, 1925.

Since May, 1914, considerable interest has been taken in the Turner Valley oil field in Alberta. The centre of this field is about 25 miles south of Calgary. In 1925 only 5 companies, operating 9 wells, reported production in this district.

Drilling was commenced early in 1920, in the Mackenzie district about 40 miles below Fort Norman. Operations in this field have been suspended for the present.

In the Coutts-Sweetgrass district, southern Alberta, a number of companies continued drilling operations through 1925, although no production was reported.

Data regarding wells located in New Brunswick have been included in the section on "Natural Gas."

**Table 312.—Principal Statistics of the Petroleum Industry in Canada, 1921-1925**

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$
1921.....	120	3,009	3,214,159	190	215,791	136,277	641,533
1922.....	120	2,880	2,764,099	160	167,176	116,678	611,176
1923.....	117	2,694	2,934,213	151	118,231	79,019	522,018
1924.....	119	2,473	5,650,086	158	152,957	(*)	467,400
1925.....	180	2,885	7,954,722	259	318,101	(*)	1,250,705

(\*) Data not available.

**Table 313.—Capital Employed in the Petroleum Industry in Canada, by Provinces, 1924 and 1925**

	1924			1925		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
	\$	\$	\$	\$	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>						
Cost of lands, buildings, plant machinery and tools.....	2,011,173	3,530,922	5,542,095	1,917,943	4,964,026	6,881,969
Cost of all materials and supplies on hand....	24,883	15,497	40,380	22,745	190,491	213,236
Cash, trading and operating accounts and bills receivable.....	33,135	34,476	67,611	28,428	831,089	859,517
<b>Total.....</b>	<b>2,069,191</b>	<b>3,580,895</b>	<b>5,650,086</b>	<b>1,969,116</b>	<b>5,985,606</b>	<b>7,954,722</b>

**Table 314.—Employees, Salaries and Wages in the Petroleum Industry in Canada, by Provinces, 1924 and 1925**

	1924			1925		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
<b>SALARIED EMPLOYEES—</b>						
Total.....	No. 24	5	29	14	11	25
Salaries \$	18,046	6,190	24,236	15,928	17,794	33,722
<b>WAGE-EARNERS—</b>						
Total.....	No. 110	19	129	112	122	234
Wages \$	89,590	39,131	128,721	99,203	185,176	284,379
<b>Grand total.....</b>	<b>No. 134</b>	<b>24</b>	<b>158</b>	<b>126</b>	<b>133</b>	<b>259</b>
Salaries and wages \$	<b>107,636</b>	<b>45,321</b>	<b>152,957</b>	<b>115,131</b>	<b>202,970</b>	<b>318,101</b>

Table 315.—Monthly Average Number of Wage-Earners in the Petroleum Industry in Canada, by Provinces, 1924 and 1925

Month	1924			1925		
	Ontario	Alberta	Canada	Ontario	Alberta	Canada
January.....	98	25	123	108	57	165
February.....	103	23	126	111	67	178
March.....	107	35	142	109	67	176
April.....	108	25	133	108	90	198
May.....	111	24	135	106	114	220
June.....	110	18	128	115	137	252
July.....	112	17	129	111	165	276
August.....	113	15	128	111	165	276
September.....	120	11	131	111	141	252
October.....	116	7	123	107	135	242
November.....	108	5	113	106	152	258
December.....	108	5	113	105	141	246
Average.....	110	19	129	112	122	234

Table 316.—Petroleum Wells in Canada, 1924 and 1925

		New Brunswick	Ontario	Alberta	Canada
Productive wells at beginning of year.....	1924	9	2,681	4	2,694
	1925	14	2,456	3	2,473
Number of productive wells drilled.....	1924	4	9		13
	1925				
Number of wells abandoned.....	1924		58		58
	1925				
Number of productive wells at end of year.....	1924	14	2,456	3	2,473
	1925	14	2,862	9	2,885

## SALT

The production of salt in the province of Ontario was first recorded in 1866 when a company was formed to drill for oil on the north bank of the Maitland river, and, while no success attended the efforts of the drillers in their search for oil, a bed of rock salt was found at a depth of 964 feet. In September, 1866, this company (incorporated under the name of the Goderich Petroleum Company, later changed to "Goderich Salt Company") commenced pumping brine. In the initial working in connection with these deposits the refining was done by the kettle method, which was soon discarded and replaced by the pan method of evaporation.

Wells were drilled and plants erected at Clinton and Seaforth, Ontario, and four refineries were in operation at Goderich in 1879; at the present time only one firm is operating at Goderich.

In 1925, wells were operated in Ontario at Windsor, Sandwich, Courtright, Exeter, Goderich, Kincardine, Sarnia, Warwick, Wingham and in Anderdon township. Mining of rock salt was carried on by one firm in Nova Scotia, at Malagash, Cumberland County. The Alberta Salt Company commenced production in the Fort McMurray district, Alberta, during 1925.

For the whole of Canada twelve firms, operating thirteen salt works, reported activity during 1925. Two of these plants were engaged primarily in the production of brine for use in the manufacture of caustic soda and soda ash in the chemical works of the producing companies.

Table 317.—Principal Statistics of the Salt Industry in Canada, 1921-1925

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	12	2,267,708	277	411,832	527,013	381,126	1,673,685
1922.....	10	2,205,184	371	432,261	369,000	407,105	1,628,323
1923.....	11	2,406,992	368	412,597	356,794	404,046	1,713,516
1924.....	11	2,479,563	364	431,618	342,118	424,578	1,374,780
1925.....	12	2,563,508	402	467,487	296,229	(a)	1,410,697

(a) Data not available.

Table 318.—Capital Employed in the Salt Industry in Canada, 1924 and 1925

	1924	1925
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	1,584,581	1,787,023
Cost of all materials and supplies on hand.....	247,412	262,831
Cash, trading and operating accounts and bills receivable.....	647,570	513,654
<b>Total.....</b>	<b>2,479,563</b>	<b>2,563,508</b>

Table 319.—Employees, Salaries and Wages in the Salt Industry in Canada, 1924 and 1925

	1924				1925			
	Number employees		Total	Salaries and wages	Number of employees		Total	Salaries and wages
	Male	Female			Male	Female		
<b>SALARIED EMPLOYEES—</b>				\$				\$
Total.....	37	14	51	113,740	45	12	57	114,960
<b>WAGE-EARNERS—</b>								
Total.....	278	35	313	317,878	310	35	345	352,527
<b>Grand total.....</b>	<b>315</b>	<b>49</b>	<b>364</b>	<b>431,618</b>	<b>355</b>	<b>47</b>	<b>402</b>	<b>467,487</b>

Table 320.—Number of Wage-Earners in the Salt Industry in Canada, by Months, 1924 and 1925

Month	1924		1925		Month	1924		1925	
	Male	Female	Male	Female		Male	Female	Male	Female
January.....	227	24	279	27	July.....	300	34	337	32
February.....	243	29	271	28	August.....	283	38	322	31
March.....	260	28	292	31	September.....	287	38	329	34
April.....	300	27	323	30	October.....	273	37	325	37
May.....	303	29	319	31	November.....	279	37	307	40
June.....	291	29	313	30	December....	264	33	285	33

## MISCELLANEOUS NON-METALLIC MINERAL INDUSTRIES

Table 321.—Capital Employed in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1924 and 1925

Industry	1924				1925			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, plant machinery and tools	Cost of all materials and supplies, on hand	Cash, trading and operating accounts and bills receivable	Total	Lands, buildings, plant machinery and tools	Cost of all materials and supplies on hand	Cash, trading and operating accounts and bills receivable	Total
Graphite.....	\$ 561,354	\$ 72,477	\$ 14,116	\$ 647,947	\$ 818,370	\$ 44,295	\$ 39,645	\$ 902,310
Abrasives, natural.	86,073	26,073	43,949	156,095	82,118	31,182	41,433	154,733
Iron oxides.....	151,546	31,527	10,560	193,633	133,659	37,579	2,702	173,940
Quartz.....	887,590	97,943	6,330	991,863	905,340	84,774	15,045	1,005,159
Talc.....	522,368	33,294	140,124	695,786	567,298	36,070	140,669	744,037
Other non-metallics*.....	2,152,035	260,342	16,242	2,428,619	1,933,786	86,229	60,466	2,080,481
<b>Total.....</b>	<b>4,360,966</b>	<b>521,656</b>	<b>231,321</b>	<b>5,113,943</b>	<b>4,440,571</b>	<b>320,129</b>	<b>299,960</b>	<b>5,060,660</b>

\*Includes actinolite, barytes, fluorspar, mineral waters, natro-alumite, pyrites, sodium carbonate, sodium sulphate, tripolite, and volcanic ash.

Table 322.—Employees, Salaries and Wages in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1924 and 1925

Industry	1924					1925		
	Super-intendents and managers	Technical employees	Clerks and stenographers	Wage-earners and wages	Total	Total salaried employees	Wage-earners and wages	Total
Graphite.....	No. 3		2	70	75	9	97	106
Salaries \$	7,800		2,700	44,949	55,449	14,070	60,951	75,021
Abrasives, natural.....	No. 5		1	70	76	6	56	62
Salaries \$	12,000		2,000	50,312	64,312	14,000	41,466	55,466
Iron oxides.....	No. 1			37	38	2	45	47
Salaries \$	3,000			30,221	33,221	3,869	31,585	35,454
Quartz.....	No. 4	2	3	148	157	15	138	153
Salaries \$	9,134	6,900	5,000	134,828	155,862	33,409	112,085	145,494
Talc.....	No. 4	1	3	53	61	10	82	92
Salaries \$	8,115	1,300	4,510	45,295	59,220	14,080	60,439	74,519
Other non-metallics*.....	No. 9		6	124	139	13	205	218
Salaries \$	16,915		4,830	61,192	82,937	29,103	120,552	149,655
<b>Total.....</b>	<b>No. 26</b>	<b>3</b>	<b>15</b>	<b>502</b>	<b>546</b>	<b>55</b>	<b>623</b>	<b>678</b>
<b>Salaries \$</b>	<b>56,964</b>	<b>8,200</b>	<b>19,040</b>	<b>366,797</b>	<b>451,001</b>	<b>108,531</b>	<b>427,078</b>	<b>535,609</b>

\*Includes actinolite, alunite, barytes, corundum, fluorspar, garnets, graphite, magnesite, magnesium sulphate, mineral waters, pyrites, sodium carbonate, sodium sulphate, tripolite and volcanic ash.

Table 323.—Number of Wage-Earners, by Months, in the Miscellaneous Non-Metallic Mineral Industries in Canada, 1925

Month	Graphite	Natural abrasives	Iron oxides	Quartz	Talc	Other non-metallics	Total
January.....	36	5	22	61	63	63	250
February.....	49	5	22	54	66	60	256
March.....	61	15	24	22	66	73	261
April.....	64	27	28	57	66	84	326
May.....	78	92	46	91	72	76	455
June.....	116	123	55	122	82	87	585
July.....	133	121	59	111	85	130	639
August.....	137	75	45	133	77	148	615
September.....	60	55	47	132	73	171	538
October.....	67	41	44	132	73	149	506
November.....	68	23	33	77	61	128	390
December.....	59	18	22	50	60	148	357
<b>Average.....</b>	<b>97</b>	<b>56</b>	<b>45</b>	<b>138</b>	<b>82</b>	<b>205</b>	<b>623</b>

## STRUCTURAL MATERIALS AND CLAY PRODUCTS

## CEMENT

Portland cement was produced in Canada during 1925 by 7 companies operating 11 plants with a total daily capacity of 34,900 barrels.

The essential elements entering into the production of Portland cement are lime, silica and alumina. These materials are found in limestone and clay, the Trenton variety of limestone being used principally. Puzzolan cement was produced from blast furnace slag by the Dominion Iron and Steel Company in 1921 but since that date this firm's cement mill has not been in operation.

According to statistics compiled for 1921, the cement industry is controlled almost entirely by Canadian capital. Of the total par value of all securities outstanding in 1921, approximately 86.5 per cent was owned in Canada; 10.6 per cent in Great Britain, 1.9 per cent in United States and the balance in other countries.

Capital employed in the plants of the operating companies in Canada during 1925 totalled \$38,081,583 as against a total of \$36,766,574 reported in 1924. Fuel and electricity costs amounted to \$2,848,904, made up of \$2,229,065, expended for fuel and \$619,839 for electric power. Plant equipment in use during the year included 967 electric motors with a rating of 52,643 h.p.

Table 324.—Principal Statistics of the Cement Industry in Canada, 1921-1925

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	14	49,160,180	2,751	3,443,884	2,788,820	2,602,029	14,195,143
1922.....	11	41,573,737	1,753	2,315,240	2,457,456	2,976,152	15,438,481
1923.....	10	38,284,494	1,842	2,551,784	2,809,414	2,947,242	15,064,661
1924.....	10	36,766,574	1,837	2,531,622	2,872,711	1,524,158	13,398,411
1925.....	11	38,081,583	1,926	2,511,400	2,229,065	1,177,103	14,046,704

Table 325.—Capital Employed in the Cement Industry in Canada, 1924 and 1925

	1924	1925
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, plant, machinery and tools.....	32,467,170	33,545,100
Cost of materials and supplies on hand.....	2,897,251	2,857,507
Cash, trading and operating accounts and bills receivable.....	1,402,153	1,678,976
<b>Total.....</b>	<b>36,766,574</b>	<b>38,081,583</b>

Table 326.—Employees, Salaries and Wages in the Cement Industry in Canada, 1924 and 1925

Class	1924		1925	
	Number of employees	Salaries and wages	Number of employees	Salaries and wages
		\$		\$
SALARIED-EMPLOYEES..... Total	97	205,994	105	213,666
WAGE-EARNERS..... Total	1,740	2,325,628	1,821	2,297,734
<b>Grand Total.....</b>	<b>1,837</b>	<b>2,531,622</b>	<b>1,926</b>	<b>2,511,400</b>

Table 327.—Number of Wage-Earners in the Cement Industry in Canada, by Months, 1924 and 1925

Month	1924	1925	Month	1924	1925
January.....	1,264	1,142	July.....	1,833	1,932
February.....	1,585	1,348	August.....	1,974	2,000
March.....	1,460	1,542	September.....	2,020	2,030
April.....	1,647	1,658	October.....	1,955	1,846
May.....	1,770	1,704	November.....	1,799	1,786
June.....	1,851	1,807	December.....	1,638	1,571
Average for 1924.....					1,740
Average for 1925.....					1,821

## CLAY PRODUCTS

Statistics relating to the more important financial aspects and the general conditions of the clay products industry are given in detail in this section. Production data for the past three years are tabulated in Part I of the report.

The clay products industry is divided into five main groups as follows: brick and tile, clay sewer-pipe, fire brick and fire clay, stoneware and pottery, and kaolin and other clays. The number and location by provinces of the plants operating in 1925 are shown in the subjoined tables.

In the tables on the primary mineral production of Canada, statistics relating to the clay products industry include only data supplied by companies using Canadian clays either alone or with imported clays. But there are a few other companies in Canada producing clay products from imported clays exclusively. For this reason, and to complete the survey of the industry as a whole, additional tables have been prepared which contain information regarding the operations of these latter companies.

Tables 328 to 332 relate to data included in mineral production; tables 333 to 336 show corresponding information concerning companies using imported clays only.

Capital employed, as represented by the value of lands, buildings, fixtures, machinery and tools, finished stocks on hand and available cash, for the clay products industry totalled \$27,760,864 in 1925 as compared with \$29,810,994 in 1924.

The principal fuel employed was bituminous coal, and as most of the important brick plants are located in the neighbourhood of the large industrial centres of Ontario and Quebec, the industry is largely dependent on imported coal. Wood is used by many of the smaller plants in outlying parts.

Natural gas is of material assistance to the clay industries at Medicine Hat and Red-cliff, Alberta. The Medalta Potteries at Medicine Hat bring their clays in from Saskatchewan, and, owing to their low cost, are able to ship stoneware into Ontario and Quebec markets in competition with the potteries of those provinces. The clays near Red-cliff are obtained by mining and are consequently very difficult to dry and burn; the advantage of having cheap fuel at hand enables the operators to produce pressed brick at reasonable costs.

Table 328.—Principal Statistics of the Clay Products\* Industry in Canada, 1924 and 1925

	1924				1925			
	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery
Number of active plants.....	192	5	7	6	173	5	6	4
Capital employed.....	\$ 24,423,104	3,149,838	1,850,385	387,667	22,410,450	2,810,782	2,114,738	424,894
Salaries paid.....	268	28	27	8	249	24	27	10
Salaries paid.....	\$ 480,139	96,385	71,100	10,984	464,207	78,842	74,680	13,064
Average number of wage-earners.....	3,064	439	181	105	3,154	358	193	121
Wages paid.....	\$ 2,591,240	500,213	187,316	103,941	2,703,719	382,685	200,239	116,639
Fuel cost.....	\$ 1,508,573	28,148	74,431	14,642	1,565,341	240,038	88,552	15,660
Value of products sold or used.....	\$ 7,046,355	1,343,197	534,838	240,687	7,374,551	1,182,454	702,707	269,979

\*Not including kaolin and other clays.

Table 329.—Establishments Reporting Shipments in the Clay Products Industry in Canada, by Provinces, 1925

Province	Number of establishments in groups indicated				Total
	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	
Prince Edward Island.....	1				1
Nova Scotia.....	5	1	2		8
New Brunswick.....	2			1	3
Quebec.....	17	1	1		19
Ontario.....	121	3	2	2	128
Manitoba.....	5				5
Saskatchewan.....	5				5
Alberta.....	5		1	1	7
British Columbia.....	7				7
<b>Canada.....</b>	<b>168</b>	<b>5</b>	<b>6</b>	<b>4</b>	<b>183</b>

Table 330.—Capital Employed in the Clay Products Industry in Canada, by Provinces, 1924 and 1925

	1924				1925			
	Capital employed as represented by				Capital employed as represented by			
	Land, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Land, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
<b>BY INDUSTRIES—</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
<i>Brick and tile—</i>								
Nova Scotia.....	546,313	19,121	7,945	573,379	549,806	12,632	15,975	578,413
New Brunswick.....	94,699	2,500		97,199	57,771	8,660	12,039	78,470
Quebec.....	7,827,840	562,906	347,737	8,738,483	7,792,573	602,669	280,233	8,675,475
Ontario.....	9,468,472	1,235,732	1,553,463	12,257,667	8,473,163	1,241,168	764,404	10,478,735
Manitoba.....	123,344	89,704	39,454	252,502	114,244	47,100	39,900	201,244
Saskatchewan.....	644,582	73,535	3,345	721,462	525,006	80,515	6,388	611,909
Alberta.....	654,141	114,787	29,847	798,775	657,777	109,684	47,944	815,405
British Columbia.....	769,123	140,623	73,891	983,637	785,862	125,676	59,261	970,799
<b>Total for Canada.....</b>	<b>20,128,514</b>	<b>2,238,908</b>	<b>2,055,682</b>	<b>24,423,104</b>	<b>18,956,202</b>	<b>2,228,104</b>	<b>1,226,144</b>	<b>22,410,450</b>
<i>Clay sewer pipe—</i>								
<b>Total for Canada.....</b>	<b>2,223,563</b>	<b>568,921</b>	<b>357,354</b>	<b>3,149,838</b>	<b>2,040,019</b>	<b>456,159</b>	<b>314,604</b>	<b>2,810,782</b>
<i>Firebrick and fireclay products—</i>								
<b>Total for Canada.....</b>	<b>1,155,833</b>	<b>321,088</b>	<b>373,464</b>	<b>1,850,385</b>	<b>1,358,011</b>	<b>348,193</b>	<b>408,534</b>	<b>2,114,738</b>
<i>Stoneware and pottery—</i>								
<b>Total for Canada.....</b>	<b>185,759</b>	<b>82,340</b>	<b>119,568</b>	<b>387,667</b>	<b>173,031</b>	<b>79,622</b>	<b>172,241</b>	<b>424,894</b>
<b>BY PROVINCES—</b>								
<i>Total for clay and clay products—</i>								
Nova Scotia.....	1,055,085	142,677	10,514	1,208,276	1,398,872	113,532	18,413	1,530,817
New Brunswick.....	110,077	25,637	9,635	145,349	70,746	26,838	18,329	115,913
Quebec.....	8,545,161	733,378	586,825	9,865,364	8,253,178	702,356	511,142	9,466,676
Ontario.....	11,407,739	1,653,952	1,890,482	14,952,173	10,273,421	1,680,208	1,120,385	13,074,014
Manitoba.....	123,344	89,704	39,454	252,502	114,244	47,100	39,900	201,244
Saskatchewan.....	644,582	73,535	3,345	721,462	525,006	80,515	6,388	611,909
Alberta.....	1,038,558	351,751	291,922	1,682,231	1,105,934	335,853	347,705	1,789,492
British Columbia.....	769,123	140,623	73,891	983,637	785,862	125,676	59,261	970,799
<b>Canada.....</b>	<b>23,693,669</b>	<b>3,211,257</b>	<b>2,906,068</b>	<b>29,810,994</b>	<b>22,527,263</b>	<b>3,112,078</b>	<b>2,121,523</b>	<b>27,760,864</b>

Table 331.—Employees, Salaries, and Wages in the Clay Products Industry in Canada 1924 and 1925

	1924				1925			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
<b>SALARIED EMPLOYEES—Total.....</b>	<b>297</b>	<b>34</b>	<b>331</b>	<b>\$ 658,608</b>	<b>272</b>	<b>38</b>	<b>310</b>	<b>\$ 630,793</b>
<b>WAGE-EARNERS—Total.....</b>	<b>3,778</b>	<b>11</b>	<b>3,789</b>	<b>3,382,710</b>	<b>3,803</b>	<b>23</b>	<b>3,826</b>	<b>3,403,282</b>
<b>and total.....</b>	<b>4,075</b>	<b>45</b>	<b>4,120</b>	<b>4,041,318</b>	<b>4,075</b>	<b>61</b>	<b>4,136</b>	<b>4,034,075</b>

Table 332.—Number of Wage-Earners in the Clay Products Industry in Canada, by Months and by Industries, 1925

Month	Brick and tile	Clay sewer pipe	Firebrick and fireclay	Stoneware and pottery	Total for clay and clay products
January.....	1,241	360	153	117	1,871
February.....	1,309	345	117	118	1,889
March.....	1,812	281	156	120	2,369
April.....	2,432	282	256	124	3,094
May.....	3,261	376	248	126	4,011
June.....	3,719	386	222	119	4,446
July.....	3,765	381	193	118	4,457
August.....	3,431	377	196	121	4,125
September.....	3,092	374	162	121	3,749
October.....	2,590	378	180	124	3,272
November.....	2,208	377	180	119	2,884
December.....	1,913	368	161	118	2,560
*Average for 1925.....	3,154	358	193	121	3,826
*Average for 1924.....	3,064	439	181	105	3,789

\*Average computed by totalling the average number of wage-earners employed by each reporting company.

Table 333.—Capital Employed by Companies in Canada Using Only Imported Clays, 1924 and 1925

	1924	1925
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, plant machinery and tools.....	961,927	1,516,143
Cost of supplies and stock on hand.....	415,535	699,105
Cash, trading and operating accounts.....	300,071	547,703
<b>Total.....</b>	<b>1,677,533</b>	<b>2,762,951</b>

Table 334.—Employees, Salaries and Wages Paid by Companies in Canada Using Only Imported Clays, 1924 and 1925

	1924				1925			
	Number employed			Salaries and wages	Number employed			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
SALARIED EMPLOYEES—Total.....	36	9	45	104,277	54	11	65	149,888
WAGE-EARNERS—Total.....	424	20	444	462,866	444	43	487	503,323
<b>Grand total.....</b>	<b>460</b>	<b>29</b>	<b>489</b>	<b>567,143</b>	<b>498</b>	<b>54</b>	<b>552</b>	<b>653,211</b>

Table 335.—Number of Wage-Earners Employed by Companies in Canada Using Only Imported Clays, by Months, 1924 and 1925

Month	Number		Month	Number	
	1924	1925		1924	1925
January.....	520	465	July.....	410	483
February.....	513	467	August.....	415	458
March.....	479	481	September.....	422	499
April.....	471	486	October.....	420	507
May.....	444	492	November.....	440	509
June.....	411	478	December.....	364	509
<b>Average 1924.....</b>					<b>444</b>
<b>Average 1925.....</b>					<b>487</b>

Table 336.—Fuel and Electricity Used by Companies in Canada Using Only Imported Clays, 1924 and 1925

	1924		1925	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal.....short tons	11,294	84,552	15,264	107,156
Anthracite coal.....“	3,167	40,296	1,871	21,637
Coke.....“	201	2,156	336	3,668
Oil (fuel).....imp. gal.	48,191	3,353	213,885	14,815
Wood.....cord	262	1,499	241	2,165
Gas.....M cu.ft.	699	489	957	670
Electricity.....k.w.h.	847,732	9,016	1,241,190	20,130
Other fuel.....		130		98
<b>Total</b> .....		<b>141,491</b>		<b>170,339</b>

## LIME BURNING

The greatest development in Canada in the business of lime burning has been in Ontario and to a less extent in Quebec. Apart from the fact that the chemical and physical properties of the limestone in these provinces, make it suitable for burning in kilns, the more extensive building and construction operations carried on, provide a ready market for the burned lime.

This industry was represented in Canada in 1925 by 62 producing plants, 27 plants being located in Ontario, 21 in Quebec, 1 in Nova Scotia, 5 in New Brunswick, 3 in Manitoba, 2 in Alberta and 3 in British Columbia. The total capital employed in the lime industry amounted to over 5.1 million dollars. The 48 plants in Ontario and Quebec reported \$3,201,604, capital employed, while the 3 plants in British Columbia showed \$1,090,731 under this item.

Returns received from operators in 1923 showed 197 active kilns, the daily capacity of which was 2,456 tons. Eight hydrators were in operation during that year, comprising four Clyde, one Shaffer, one Kritser and one special type. High calcium limestone was used by 45 firms, dolomite by 10 firms, and both high calcium and dolomite by one operator.

In the manufacture of lime, wood was widely used throughout Ontario and Quebec where the supply is plentiful and where many of the kilns are small, but considerable quantities of coal were also used. In the British Columbia plants, wood only was used.

Table 337.—Principal Statistics of the Lime Industry in Canada, 1921-1925

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	66	4,990,969	931	949,966	698,992	407,620	2,781,197
1922.....	63	4,984,910	1,110	1,013,486	725,168	522,222	3,165,005
1923.....	50	6,050,954	1,197	1,191,416	953,709	806,916	3,266,608
1924.....	49	5,165,964	927	970,672	740,878	757,898	3,178,541
1925.....	56	5,154,046	1,006	960,434	717,940	673,447	3,387,652

Table 338.—Capital Employed in the Lime Industry in Canada, by Provinces, 1924 and 1925

Province	1924				1925			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....					11,000	700		11,700
New Brunswick.....	210,483	36,939	29,725	277,147	193,712	27,352	27,708	248,772
Quebec.....	916,965	112,848	138,928	1,168,741	1,030,409	113,441	176,290	1,320,140
Ontario.....	1,565,850	159,893	144,641	1,870,384	1,520,717	226,693	134,054	1,881,464
Manitoba.....	405,884	26,916	4,500	437,300	398,849	21,621	12,605	433,075
Alberta.....	134,563	8,617	16,602	159,782	134,142	15,565	18,457	168,164
British Columbia.....	1,108,148	66,754	77,708	1,252,610	935,190	32,193	123,348	1,090,731
<b>Canada.....</b>	<b>4,341,893</b>	<b>411,967</b>	<b>412,104</b>	<b>5,165,964</b>	<b>4,224,019</b>	<b>437,565</b>	<b>492,462</b>	<b>5,154,046</b>

Table 339.—Employees, Salaries and Wages in the Lime Industry in Canada, by Provinces, 1924 and 1925

	*New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
<b>1924</b>							
<b>SALARIED EMPLOYEES—</b>							
Total..... No.	15	19	39	6	2	10	91
..... \$	21,735	37,575	74,320	9,140	4,750	21,357	168,877
<b>WAGE-EARNERS—</b>							
Total—							
Male..... No.	77	180	398	56	12	113	836
Wages..... \$	56,592	158,968	402,292	38,232	13,370	132,341	801,795
<b>Total—Employees..... No.</b>	<b>92</b>	<b>199</b>	<b>437</b>	<b>62</b>	<b>14</b>	<b>123</b>	<b>927</b>
<b>Salaries and Wages..... \$</b>	<b>78,327</b>	<b>196,543</b>	<b>476,612</b>	<b>47,372</b>	<b>18,120</b>	<b>153,698</b>	<b>970,672</b>
<b>1925</b>							
<b>SALARIED EMPLOYEES—</b>							
Total..... No.	16	15	40	4	4	10	89
..... \$	15,791	25,104	77,186	5,950	4,700	17,252	145,983
<b>WAGE-EARNERS—</b>							
Total—							
Male..... No.	51	253	427	63	13	110	917
Wages..... \$	32,259	178,588	437,676	48,339	13,781	103,808	814,451
<b>Total—Employees..... No.</b>	<b>67</b>	<b>268</b>	<b>467</b>	<b>67</b>	<b>17</b>	<b>120</b>	<b>1,006</b>
<b>Salaries and Wages..... \$</b>	<b>48,050</b>	<b>203,692</b>	<b>514,862</b>	<b>54,289</b>	<b>18,481</b>	<b>121,060</b>	<b>960,434</b>

\*Includes data for Nova Scotia.

Table 340.—Number of Wage-Earners in the Lime Industry in Canada, by Provinces and by Months, 1925

Month	*New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
January.....	13	195	377	47	5	95	732
February.....	18	201	341	47	11	96	714
March.....	41	198	373	55	16	94	777
April.....	63	222	402	78	14	108	887
May.....	55	271	419	68	14	104	931
June.....	51	287	409	72	14	115	948
July.....	53	293	384	69	17	112	928
August.....	39	242	401	62	17	106	867
September.....	52	259	400	61	15	108	895
October.....	46	265	433	69	15	111	939
November.....	40	162	437	59	9	110	817
December.....	44	166	426	57	6	119	818
<b>Average for 1925.....</b>	<b>51</b>	<b>253</b>	<b>427</b>	<b>63</b>	<b>13</b>	<b>110</b>	<b>917</b>
<b>Average for 1924.....</b>	<b>77</b>	<b>180</b>	<b>398</b>	<b>56</b>	<b>12</b>	<b>113</b>	<b>836</b>

\*Includes data for Nova Scotia.

## SAND AND GRAVEL

For statistical purposes, the sand and gravel industry has been divided into two parts comprising the operations of (1) railway companies producing sand and gravel for ballast and other purposes; (2) all other producers.

The figures given in the following tables do not include the operations of railway companies except where specifically mentioned. The railway companies were not asked to furnish any statistics for this industry other than the figures for production, as, owing to the varied nature of their operations, it would have been impossible for them to give the detailed data generally required. Among the other operating plants in this industry, of which there were 622, in Canada in 1925, it was found that the production of sand and gravel was often a subsidiary part of the business transacted. On this account the figures shown for capital employed in 1925 refer in small part to other industries, but on the whole, relate as closely as possible to the industry under review.

It will be readily apparent from an inspection of the tables on employees that totals do not represent the actual number of persons engaged in the industry as a great many of the small operators had no paid help. Also, in some instances the labour was provided by those requiring sand and gravel. The following tables which show comparative figures for salaried officials, wage-earners, and fuel costs are self-explanatory.

Table 341.—Principal Statistics of the Sand and Gravel Industry in Canada, 1921-1925

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	218	(a)	590	454,910	47,641	265,403	2,537,249
1922.....	342	4,098,928	750	684,626	99,069	445,222	3,502,935
1923.....	598	4,487,005	801	692,161	99,409	270,554	3,016,518
1924.....	558	5,194,037	927	848,741	134,378	(a)	3,181,083
1925.....	622	5,286,268	1,650	1,231,856	158,645	(a)	3,220,410

(a) Data not available.

Table 342.—Capital Employed in the Sand and Gravel Industry in Canada, by Provinces, 1924 and 1925

Province	1924				1925			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	16,500	2,500	3,000	22,000				
New Brunswick.....	5,500	51		5,551				
Quebec.....	267,727	2,922	33,890	304,539	464,255	11,725	75,325	551,305
Ontario.....	3,148,359	56,491	257,178	3,462,028	3,064,386	44,464	194,181	3,303,031
Manitoba.....	352,394	9,678	46,795	408,867	321,739	9,427	84,865	416,031
Saskatchewan.....	40,750			40,750	39,750			39,750
Alberta.....	278,218	14,744	4,598	297,560	315,187	832	2,157	318,176
British Columbia.....	585,789	654	66,299	652,742	618,686	745	38,544	657,975
<b>Canada.....</b>	<b>4,695,237</b>	<b>87,040</b>	<b>411,760</b>	<b>5,194,037</b>	<b>4,824,003</b>	<b>67,193</b>	<b>395,072</b>	<b>5,286,268</b>

**Table 343.—Employees, Salaries and Wages in the Sand and Gravel Industry in Canada, by Provinces, 1924 and 1925**

Province	1924				1925			
	Number of employees			Salaries and wages	Number of employees			Salaries and wages
	On salary	On wages	Total		On salary	On wages	Total	
				\$				\$
Nova Scotia.....	2	16	18	10,508		26	26	5,152
New Brunswick.....	1	13	14	1,717		1	1	936
Quebec.....	8	177	185	80,922	20	472	492	220,645
Ontario.....	63	486	549	552,370	59	743	802	730,325
Manitoba.....	7	29	36	38,503	7	133	140	101,994
Saskatchewan.....		3	3	3,043		3	3	2,504
Alberta.....	4	54	58	44,958	2	103	105	41,162
British Columbia.....	8	56	64	116,720	10	71	81	129,138
<b>Canada.....</b>	<b>93</b>	<b>834</b>	<b>927</b>	<b>848,741</b>	<b>98</b>	<b>1,552</b>	<b>1,650</b>	<b>1,231,856</b>

**Table 344.—Number of Wage-Earners in the Sand and Gravel Industry in Canada, by Months and by Provinces, 1925**

Month	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
January.....		1	50	188	3		3	63	308
February.....	8	1	48	188	3		2	74	324
March.....	7	1	83	297	7	1	8	74	478
April.....	7	1	141	424	94	3	49	72	791
May.....	8	1	270	690	100	3	45	70	1,187
June.....	6	1	348	849	94	3	101	72	1,474
July.....	8	1	418	806	140	3	138	71	1,585
August.....	12	1	312	717	112	3	173	73	1,403
September.....	29	1	320	777	187	3	149	68	1,534
October.....	25	1	344	780	119	2	109	73	1,453
November.....	8	1	215	593	152		63	69	1,101
December.....	2	1	135	646	196		2	64	1,046
<b>*Average.....</b>	<b>26</b>	<b>1</b>	<b>472</b>	<b>743</b>	<b>133</b>	<b>3</b>	<b>103</b>	<b>71</b>	<b>1,552</b>

\*Average computed by totalling the average number of wage-earners employed by each reporting company.

## STONE

Operations in the stone-quarrying industry in Canada in 1925 were carried on by 201 firms. The number of producers in each province was as follows: Nova Scotia, 10; New Brunswick, 9; Quebec, 92; Ontario, 74; Manitoba, 3; Alberta 1; and. British Columbia 12.

The statistics collected under mineral production for the stone industry are confined to quarrying operations and stone-dressing works conducted in conjunction with the quarry. It must be borne in mind when reviewing the tabulated statistics for this industry that there is a considerable quantity of stone quarried by farmers, etc., for local foundation and concrete work, of which no accurate general information can be obtained.

**Table 345.—Principal Statistics Relating to the Stone Quarrying Industry in Canada, 1921-1925**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1921.....	145	11,138,035	2,067	2,017,272	141,442	2,369,130	6,343,696
1922.....	162	13,004,233	2,859	2,673,241	167,139	1,259,552	5,989,864
1923.....	158	13,725,677	2,850	2,665,520	400,517	1,130,639	5,920,578
1924.....	170	14,317,148	2,877	2,768,255	383,800	1,329,233	6,407,757
1925.....	201	12,233,773	4,148	3,599,653	241,032	(a)	7,464,777

(a) Data not available.

Table 346.—Capital Employed in the Stone Quarrying Industry in Canada, by Provinces, 1924 and 1925

Province	1924				1925			
	Capital employed as represented by				Capital employed as represented by			
	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	1,116,723	24,341	11,713	1,152,777	1,116,909	30,867	9,483	1,157,259
New Brunswick...	100,386	29,266	27,265	156,917	107,524	33,928	27,574	169,026
Quebec.....	4,096,953	366,228	535,230	4,998,416	4,144,979	379,259	696,591	5,220,829
Ontario.....	6,139,998	253,106	518,030	6,911,134	4,421,725	183,074	234,399	4,839,198
Manitoba.....	205,123	8,885	62,961	276,969	224,394	6,882	.....	231,276
Alberta.....	8,000	.....	.....	8,000	.....	.....	.....	.....
British Columbia..	454,723	152,193	206,019	812,935	487,685	49,565	28,935	566,185
<b>Canada.....</b>	<b>12,121,911</b>	<b>834,019</b>	<b>1,361,218</b>	<b>14,317,148</b>	<b>10,503,216</b>	<b>683,575</b>	<b>1,046,982</b>	<b>12,233,773</b>

Table 347.—Employees, Salaries and Wages in the Stone Quarrying Industry in Canada, by Provinces, 1924 and 1925

	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	British Columbia	Canada
1924							
SALARIED EMPLOYEES—							
No. ....	4	8	95	67	5	17	196
Total.....Salaries \$	6,881	11,200	155,216	131,862	8,694	38,631	352,484
No. ....	87	78	1,376	892	52	176	*2,681
WAGE-EARNERS.....Wages \$	54,254	39,235	1,235,159	813,724	56,241	208,242	*2,415,772
<b>Total—Employees.....No.</b>	<b>91</b>	<b>86</b>	<b>1,471</b>	<b>959</b>	<b>57</b>	<b>193</b>	<b>*2,877</b>
<b>Salaries and wages... \$</b>	<b>61,135</b>	<b>50,435</b>	<b>1,390,375</b>	<b>945,586</b>	<b>64,935</b>	<b>246,873</b>	<b>*2,768,256</b>
1925							
SALARIED EMPLOYEES—							
No. ....	5	9	105	85	7	14	225
Total.....Salaries \$	6,938	12,200	188,657	131,736	15,242	27,989	382,762
No. ....	108	95	2,291	1,141	82	206	3,923
WAGE-EARNERS.....Wages \$	60,634	56,296	1,984,921	819,699	90,689	204,652	3,216,891
<b>Total—Employees.....No.</b>	<b>113</b>	<b>104</b>	<b>2,396</b>	<b>1,226</b>	<b>89</b>	<b>220</b>	<b>4,148</b>
<b>Salaries and wages... \$</b>	<b>67,572</b>	<b>68,496</b>	<b>2,173,578</b>	<b>951,435</b>	<b>105,931</b>	<b>232,641</b>	<b>3,599,653</b>

\*Includes 20 wage-earners receiving \$8,917 in Alberta.

## PART THREE

### DIRECTORY

*In the following pages the names and addresses of all the principal operators in the Canadian mining industry are given and the location of the properties worked in 1925 is also shown.*

## METALLIC MINERAL INDUSTRIES

## The Auriferous Quartz Mining Industry

Name of Operator	Address	Name of Mine	Location
NOVA SCOTIA			
Malaga Gold Mines.....	Malaga.....	Malaga.....	Queens Co.
Miseler and Emmett.....	60 Edward St., Halifax.....	Fiske Block.....	Queens Co.
Consolidated Mines and Power Co.....	170 Summer St., Boston U.S.A.	.....	Goldenville.
Burroughs, R. E.....	Moose River Gold Mines.....	Root Hog.....	Moose River $\frac{1}{2}$ Gold Mines.
ONTARIO			
<i>Kirkland Lake Area—</i>			
*Harvey Kirkland Mines, Ltd.....	C.P.R. Bldg., Toronto.....	Harvey Kirkland.....	Lebel Tp.
*Huntton Kirkland Gold Mines, Ltd.....	171 Yonge St., Toronto.....	Huntton.....	Teck Tp.
*Kirk Gold Mines Co., Ltd.....	911 Kent Bldg., Toronto.....	Kirk Gold.....	Lebel Tp.
*Kirkland Lake Gold Mining Co., Ltd.	810 Lumsden Bldg., Toronto.....	Kirkland Lake.....	Teck Tp.
Lake Shore Mines, Ltd.....	Kirkland Lake.....	Lake Shore.....	Teck Tp.
*Queen Lebel Gold Mines, Ltd.....	Kirkland Lake.....	Queen Lebel.....	Lebel Tp.
*Sylvanite Gold Mines, Ltd.....	Kirkland Lake.....	Sylvanite.....	Teck Tp.
Teck Hughes Gold Mines, Ltd.....	Kirkland Lake.....	Teck Hughes.....	Teck Tp.
Tough Oakes Burnside Gold Mines, Ltd.....	217 Bay St., Toronto.....	Tough Oakes Burnside.....	Teck and Lebel Tp.
Wright-Hargreaves Mines, Ltd.....	Bridgeburg.....	Wright Hargreaves.....	Teck Tp.
<i>Boston Creek Area—</i>			
Barry Hollinger Gold Mines, Ltd.....	807 General Assurance Bldg., Toronto.....	Barry Hollinger.....	Pacaud Tp.
*Gold Hill Mining Co., Ltd.....	Haileybury.....	Gold Hill.....	Catharine Tp.
*McMaster Syndicate.....	Rosegrove.....	McMaster.....	Boston Ck.
<i>Larder Lake Area—</i>			
Argonaut Gold, Ltd.....	307 Dominion Express Building, Montreal, Quebec.....	Argonaut.....	Gauthier Tp.
*Canadian Associated Goldfields.....	306 C.P.R. Bldg., Toronto.....	Block "A".....	McVittie Tp.
*Crown Reserve Mining Co., Ltd.....	Box 386, Montreal.....	Crown Reserve.....	Larder Lake.
*Northland Gold Mines, Ltd.....	Kirkland Lake.....	Northland Gold.....	Gauthier Tp.
<i>Lightning River Area—</i>			
Blue Quartz Gold Mines, Ltd.....	328 Confederation Life Bldg., Toronto.....	Blue Quartz.....	Painkiller Lake.
<i>North Western Ontario Area—</i>			
*British Canadian Mines, Ltd.....	8 Bloor St. E., Toronto.....	Foley.....	Rainy River Tp.
Champion Gold Mines, Ltd.....	329 Chamber of Commerce, Buffalo, N.Y.....	Champion.....	Kenora Dist.
*Contact Bay Mines Ltd.....	326 Cutler Bldg., Rochester, N.Y.....	Bonanza.....	Van Horn Tp.
<i>Porcupine Area—</i>			
*Canadel Gold, Ltd.....	Timmins.....	Rochester.....	Tisdale Tp.
*Coniarum Mines, Ltd.....	50 Ontario St., St. Catharines.....	Coniarum.....	Tisdale Tp.
Consolidated West Dome Lake Mines, Ltd.....	South Porcupine.....	Cons. West Dome.....	Tisdale Tp.
Dome Mines, Ltd.....	36 Toronto St., Toronto.....	Dome.....	Tisdale Tp.
*Hayden Gold Mines, Ltd.....	Brisbane Bldg., Buffalo, N.Y.....	Hayden.....	Deloro Tp.
Hollinger Consolidated Gold Mines, Ltd.....	Timmins.....	Hollinger.....	Tisdale Tp.
*March Gold, Ltd.....	White Bldg., Buffalo, N.Y.....	March Gold.....	Deloro Tp.
McIntyre Porcupine Mines, Ltd.....	Standard Bank Bldg., Toronto.....	McIntyre Porcupine.....	Tisdale Tp.
Night Hawk Peninsular Mines, Ltd.....	Bay St., Toronto.....	Night Hawk.....	Cody Tp.
*Porcupine Goldfields Development & Finance Co.....	Canada Cement Bldg., Montreal, Quebec.....	Ankerite.....	Deloro Tp.
Vipond Consolidated Mines, Ltd.....	302 Bay St., Toronto.....	Vipond.....	Tisdale Tp.
<i>Sudbury Area—</i>			
*Mundell, Wm.....	Metagama.....	Ina.....	Sudbury Dist.
*McMillan Development Co.....	Ess Creek.....	Red Rock.....	Sudbury Dist.
<i>Frontenac County—</i>			
*Ore Chimney Mining Co., Ltd.....	North brook.....	Ore Chimney.....	Barrie Tp.
<i>Temagami Forest Reserve—</i>			
*Emerald Lake Gold Mines, Ltd.....	New Hamburg.....	Emerald Lake.....	Temagami.
MANITOBA			
Manitoba Metals Mining Co.....	Bank of Hamilton Bldg., Toronto.....	Rex.....	Herb Lake.

\*Operating but not producing.

## The Auriferous Quartz Mining Industry—Concluded

Name of Operator	Address	Name of Mine	Location
BRITISH COLUMBIA			
*Bush Mines, Ltd.	821 Rogers Bldg., Vancouver.		Cassiar.
British America Mining Corp.	Similkameen.	Horn Silver.	Osoyoos Mining Division.
Engineer Gold Mines, Ltd.	120 Broadway, New York, N.Y.	Engineer.	Atlin Mining Division.
Esperanza Mine.	Anyox, B.C.	Esperanza.	Nass River Mining Division.
Golskiesh.	Anyox.	Golskiesh.	
Hawkins and Shelledy.	Rossland.	I.X.L.	Trail Creek Mining Division.
Hedley Gold Mining Co., Ltd.	Hedley.	Nickel Plate.	Osoyoos Mining Division.
Norcross, A. G.	Nelson.	Granite-Poormen.	Nelson Mining Division.
Premier Gold Mining Co., Ltd.	Premier.	Premier.	Portland Canal Mining Division.
Silverado Mines, Ltd.	Box 1120, Victoria.	Silverado.	Portland Canal Mining Division.
Sloan, D.	Shalalth.	Pioneer.	Lillooet Mining Division.
Windpass Gold Mines Co.	Chu Chua.	Windpass.	Kamloops Mining Division.

## The Copper-Gold-Silver Mining Industry

QUEBEC			
*Abana Mines, Ltd.	205 St. James St., Montreal.		Desmeloizes Tp.
*Area Mines, Ltd.	120 St. James St., Montreal.	Area.	Rouyn Tp.
*Amulet Gold Mines, Ltd.	120 St. James St., Montreal.	Amulet.	Rouyn Tp.
Arntfield Syndicate.	13 King St. W., Toronto, Ont.		Boischatel Tp.
*Archæa Mines Development Co., Ltd.	301 Union Bk. Bldg., Ottawa, Ont.		Rouyn Tp.
*Brownlee Gold Mines, Ltd.	540 Canada Cement Bldg., Montreal.		Rouyn Tp.
*Canadian Exploration, Ltd.	Amos.		Desmeloizes Tp.
*Don Rouyn Gold Mines, Ltd.	14 Hospital St., Montreal.		Rouyn Tp.
*Duprat Mines, Ltd.	126 St. Peter St., Quebec.		Duprat Tp.
Eustis Mining Company.	Eustis.	Eustis.	Ascot.
*Fagala Mining Syndicate Inc.	Bank of Toronto Bldg., Montreal.		Joannes Tp.
*Frontier Syndicate.	136 St. James St., Montreal.		
*Huronian Belt Co.	302 Bay St., Toronto, Ont.		Rouyn Tp.
*Kenojeris Syndicate.	Temiskaming, Ont.		Rouyn Tp.
*La Rose Mines, Ltd.	Bank of Toronto Bldg., Montreal.		Louvicourt Tp.
*Malartic Mining Co.	35 Delaware Ave., Ottawa, Ont.		Malartic Tp.
*McIntyre Porcupine Mine.	Standard Bank Bldg., Toronto, Ont.		Rouyn Tp.
*Nipissing Mining Co., Ltd.	Cobalt, Ont.		Rouyn Tp.
*Noranda Mines Ltd.	Rouyn.		Rouyn Tp.
*O'Brien, M. J., Ltd.	114 Wellington St., Ottawa, Ont.		Rouyn Tp.
*Parsons, P. Allen.	38 Lawrence Ave., West Orange, N.J.		Ascot Tp.
*Porcupine Goldfields Development and Finance Co., Ltd.	407 Canada Cement Bldg., Montreal.		Malartic Tp.
*Read, W. A.	Box 80, Amos.		Bourlaimague Tp.
*Renault, Auguste.	Ville Marie.		Dasserat Tp.
*Sisocoe Gold Mines, Ltd.	137 McGill St., Montreal.		Dubuisson Tp.
*Timmins, N. A., Inc.	Canada Cement Bldg., Montreal.	Waite Montgomery.	Rouyn Tp.
*Unison Gold Mines, Ltd.	Box 222, Amos.		Dubuisson Tp.
*Victoria Syndicate, Ltd.	Coniston, Ont.		
BRITISH COLUMBIA			
Allenby Copper Co.	Allenby.	Copper Mountain.	Similkameen Mining Division.
Belmont Surf Inlet Mines, Ltd.	Surf Inlet.	Surf Inlet.	Skeena Mining Division.
Boundary Mercantile & Equipment Co.	Greenwood.	Imperial.	Greenwood Mining Division.
*British Columbia Silver Mines, Ltd.	612 Pacific Bldg., Vancouver.	Silver.	Portland Canal Mining Division.
Britannia Mining and Smelting Co.	Britannia Beach.	Britannia.	Vancouver Mining Division.
*Coast Copper Co., Ltd.	703 Birks Bldg., Vancouver.	Old Sport, Merry Widow.	Quatsino Mining Division.

\*Operating but not producing.

## The Copper-Gold-Silver Mining Industry—Concluded

Name of Operator	Address	Name of Mine	Location
<b>BRITISH COLUMBIA—Con.</b>			
Consolidated Mining & Smelting Co. of Canada, Ltd.	Rossland	Rossland Group	Trail Creek Mining Division.
Granby Consolidated Mining, Smelting and Power Co., Ltd.	Anyox	{Hidden Creek Group... {Outsider.	Nass River Mining Division. Portland Canal Mining Division.
McDonald, Alex.	Nelson	Gold Hill	Nelson Mining Division.
*Princeton Mining and Development Co.	Princeton	Copper Farm	Similkameen Mining Division.
*Rossland Velvet Mines, Ltd.	Rossland	Velvet	Trail Creek Mining Division.

## Iron Mining Industry

<b>QUEBEC</b>			
Baie St. Paul Titanic Ore Co.	Baie St. Paul	Glen	St. Urbain.

## Molybdenum Mining Industry

<b>QUEBEC</b>			
Canadian Wood Molybdenite Co.	Quyong	Moss	Onslow Tp.

## Nickel-Copper Mining Industry

<b>ONTARIO</b>			
International Nickel Co. of Canada, Ltd.	67 Wall St., New York, N.Y.	Creighton	Sudbury.
Mond Nickel Co., Ltd.	Coniston	Worthington Leveack. Garson, Victoria No. 1 and Frood Extension.	Drury and Leveack Tp.

## The Silver-Cobalt Mining Industry

<b>ONTARIO</b>			
*Agaunico Northern Extension Co.	Cobalt	Agaunico	Bucke Tp.
Brewer and Sullivan	Cobalt	Adanac	Cobalt.
*Canadian Lorrain Silver Mines, Ltd.	302 Bay St., Toronto	Canadian Lorrain	South Lorrain.
*Capital Silver Mines	Standard Bank Bldg., Toronto	Capital	Haultain.
Castle-Tretheway Mines	Standard Bank Bldg., Toronto	Castle Tretheway	Haultain Tp.
Cobalt Contact Mines	North Cobalt	Cobalt Contact	Bucke Tp.
*Coleroy Gowganda Mines, Ltd.	Mail Bldg., Toronto	Coleroy	Gowganda.
Coniagas Mines, Ltd.	50 Ontario St., St. Catharines	Coniagas	Coleman Tp.
Crown Reserve Mining Co., Ltd.	Box 386, Montreal	Crown Reserve	Coleman Tp.
Doherty Easson Mining Syndicate	King St. E., Toronto	Penn. Canadian	Cobalt.
Galvin, M. J.	Sandwich	Mother Lode	James Tp.
Genesee Mining Co., Ltd.	Cobalt	Genesee	Cobalt.
*Gowganda Duggan Silver Syndicate	Isabella St., Toronto	Gowganda Duggan	Gowganda.
*Gowganda Keora Silver Mg. Co.	1106 C.P.R. Bldg., Toronto	Porcupine Keora	Gowganda.
*Hector Silver Mines, Ltd.	Excelsior Life Bldg., Toronto	Hector Silver	Gillies Limit.
Hudson Bay Mines, Ltd.	New Liskeard	Hudson Bay	Cobalt.
Irwin Geo.	Box 547, Cobalt	Silver Queen	Coleman Tp.
Keeley Silver Mines, Ltd.	302 Bay St., Toronto	Keeley	South Lorrain.
Kerr Lake Mining Co., Ltd.	61 Broadway, New York, N.Y.	Kerr Lake	Coleman Tp.
La Rose Mines, Ltd.	Cobalt	La Rose	Coleman Tp.
Lorrain Consolidated Mines, Ltd.	42 Broadway, New York, N.Y.	Lorrain	Silver Centre.
McKinley-Darragh-Savage Mines of Cobalt, Ltd.	Cobalt	McKinley-Darragh-Savage	Coleman Tp.

\*Operating but not producing.

## The Silver-Cobalt Mining Industry—Concluded

Name of Operator	Address	Name of Mine	Location
<b>ONTARIO—Con.</b>			
McLeod, J. H.	Box 156, Cobalt.	Foster	Coleman Tp.
Menago Mining Co., Ltd.	Sudbury.	Colonial	Coleman Tp.
Millcrest Mining Co., Ltd.	Bank of Hamilton Bldg., Toronto.	Millcrest.	Bestel Tp.
		Buffalo.	Coleman Tp.
		Lorrain Trout Lake.	Coleman Tp.
		Lorrain Operating Co.	Coleman Tp.
		Townsite.	Coleman Tp.
		City of Cobalt.	Coleman Tp.
		Peterson Lake.	Coleman Tp.
Mining Corporation of Canada, Ltd.	1512 Bank of Hamilton Bldg., Toronto.	W. J. Nine.	Gowganda Tp.
Nine, W. J., Silver Mines.	302 Bay St., Toronto.	Nipissing.	Coleman Tp.
Nipissing Mining Co., Ltd.	Cobalt.	Alladin.	Coleman Tp.
O'Brien, M. J., Ltd.	Cobalt.	O'Brien.	Coleman Tp.
		Miller-Lake-O'Brien.	Gowganda.
*Oxford Cobalt Silver Mines, Ltd.	Woodstock.	Oxford Cobalt.	Gillies.
Reinhardt, Carl.	Box 303, Cobalt.	Crown Reserve.	Coleman Tp.
Tonopah Canadian Mines.	Bullitt Bldg., Philadelphia.	Walsh, Morrison.	Gowganda.
Wigwam Silver Mines.	232 St. James St., Montreal, Quebec.	Wigwam.	Gowganda.

## The Silver-Lead-Zinc Mining Industry

<b>QUEBEC</b>			
*Alpha Mining Syndicate.	Timmins, Ont.	Wright.	Duhamel Tp.
British Metals Corp., Ltd.	263 St. James St., Montreal.	Tetreault.	Montauban Tp.
British Metals Corp., Ltd.	263 St. James St., Montreal.	Concentrating Plant.	Notre Dame des Anges.
*Federal Zinc and Lead Co., Ltd.	Drummond Bldg., Montreal.	Federal.	Gaspé Co.
*Lyal and Beidelman.	Drummond Bldg., Montreal.	Lyal and Beidelman claims.	Gaspé Co.
<b>ONTARIO</b>			
Kingdon Mining, Smelting and Manufacturing Co., Ltd.	Galetta.	Kingdon.	Galetta.
<b>BRITISH COLUMBIA</b>			
<b>Ainsworth Mining Division—</b>			
Consolidated Mining and Smelting Co. of Canada.	Tadanac.	Highland, No. 1.	Ainsworth.
Cork-Province Mines, Ltd.	Kaslo.	Cork-Province.	Keen Creek.
Fowler and Eastman.	Riondel.	Blue Bell.	Ainsworth.
Green and Green.	Kaslo.	Silver Bell.	Kaslo Creek.
McPherson and Forsyth.	Ainsworth.	Spokane-Trinket.	Ainsworth.
Stutz, J. C.	Ainsworth.	Silver Hoard.	Ainsworth.
Whitewater Mines, Ltd.	Kaslo.	Whitewater.	Retallack.
<b>Atlin Mining Division—</b>			
Atlin Silver-Lead Mines (J. M. Ruffner).	Atlin.	Ruffner Group.	Atlin.
<b>Fort Steele Mining Division—</b>			
Consolidated Mining and Smelting Co. of Canada, Ltd.	Kimberley.	Sullivan, St. Eugene*.	Kimberley.
<b>Golden and Windermere Division—</b>			
Bruce, R. Randolph.	Invermere.	Paradise.	Toby Creek.
Farnham, Jas. P.	57 West 57th St., New York, NY	Rothschild.	Golden.
Galena Ghat Mines, Ltd.	Invermere.	White Cat.	Slade Creek.
Golden Eagle Mining Co.	Box 857 Nelson.	Golden Eagle.	Windermere.
*Pacific Mines Petroleum and Development Co., Ltd.	608 Pacific Bldg., Vancouver.	Monarch.	Golden.
<b>Grand Forks Mining Division—</b>			
Breakell, Hugh.	Paulson.	Carlton.	Grand Forks.
<b>Greenwood Mining Division—</b>			
Boundary Mercantile and Equipment Co., Ltd.	Greenwood.	Prince Henry.	Greenwood.
*Elkhorn Mines, Ltd.	Pemberton Bldg., Victoria.	Elkhorn Fraction.	Greenwood.
*Jack Paul Mining Co.	Spokane, Wash.	Riverside.	Rock Creek.
McIntosh & Lee.	Beaverdell.	Bell.	Wallace Mountain.
Morrison, A. J.	Greenwood.	Wellington.	Greenwood.
Wallace Mountain Mines, Ltd.	Box 176, Penticton.	Sally Group.	Beaverdell.
Strathmore Syndicate.	Greenwood.	Strathmore.	Greenwood.

\*Operating but not producing.

## The Silver-Lead-Zinc Mining Industry—Concluded

Name of Operator	Address	Name of Mine	Location
<b>BRITISH COLUMBIA—Con.</b>			
<i>Nelson and Arrow Lake Mining Divisions—</i>			
*Forster, H. E.	Wilmer	Millie Mack	Cariboo Creek.
Iron Mountain, Ltd.	Nelson	Emerald	Salmo.
Miller and Groh	Nelson	Fern	Nelson.
McGregor, Horlow and Burnett	Port Crawford	Porcupine	Crawford Creek.
*Shepherd Mining Co.	Riondel	Kirby	Riondel.
<i>Omineca Mining Division—</i>			
Beaumont and Keeley	New Hazelton	Silver cup	New Hazelton.
Duthie, J. F. (John R. Turner)	Smithers	Henderson & Mamie	Hudson Bay Mtn.
Simpson, Donald	Smithers	Victory	Hudson Bay Mtn.
<i>Portland Canal Mining Division—</i>			
L. and L. Glacier Creek Mines, Ltd.	414 Pender St., Vancouver	L. and L.	Portland Canal.
Porter-Idaho Syndicate	Stewart	Porter-Idaho	Stewart.
<i>Slocan and Slocan City Mining Divisions—</i>			
*American Bay Mining Co.	Sandon	American Bay	Sandon.
Ainslie, Roy F.	Silverton	Galena Farm	Slocan.
Antoine Consolidated Mines	Kaslo	Antoine	Slocan.
Cechelero, John and Partners	New Denver	Mountain Chief	New Denver.
Cunningham Mines, Ltd.	Alamo	Van Roi, Queen Bess, Wonderful	Alamo.
Dennis and Wetterhouse	Silverton	Mammoth, Buffalo	Slocan.
Harris, J. M. and Kelly, F. T.	Sandon	No. 1	Sandon.
Jennes, Henry and Partners	New Denver	Apex	Slocan.
Lucky Jim Lead & Zinc Co., Ltd.	Empire State Bldg., Spokane	Lucky Jim	Zincton.
McLean, Murdock	New Denver	Mowich	Slocan.
O'Neal, D. B.	Slocan	L.T. Group	Slocan.
Petty, Geo.	Sandon	Victor	Sandon.
Rambler-Cariboo Mines, Ltd. (W. A. Cameron)	New Denver	Rambler-Cariboo	Three Forks.
Rosebery-Surprise Mining Co., Ltd.	New Denver	Bosun, Surprise Monitor	New Denver.
Ruth Hope Mining Co., Ltd.	Kaslo	Ruth	Sandon.
Silversmith Mines, Ltd.	Box 1772, Spokane, Wash.	Silversmith	Sandon.
Slocan Silver Mines, Ltd.	Alamo	McAllister	Three Forks.
*Victoria Syndicate, Ltd.	Kaslo	Carnation	Sandon.
Washington Mine, Ltd.	Kaslo	Washington	Slocan.
Zimmerman, K. E.	Slocan City	Anna	Slocan.
<i>Similkameen and Trail Creek Mining Division—</i>			
Davis, S. B.	Beaverdell	Bounty, Sally	Beaverdell.
*Waverley Mines Company	Spokane, Wash.	Waverley, Tangier	Albert Canyon.
<b>YUKON</b>			
Keno Hill, Ltd.	120 Broadway, New York, N. Y.	Keno Hill	Keno Hill, Mayo Division.
Treadwell Yukon Co., Ltd.	Crocker Bldg., San Francisco, Cal.	Treadwell Yukon	Keno Hill, Mayo Division.

## Canadian Smelting and Refining Industry

<b>ONTARIO</b>			
Coniagas Reduction Co.	St. Catharines		Thorold.
Deloro Smelting & Refining Co.	Deloro		Deloro.
International Nickel Co. of Canada	67 Wall St., New York, N. Y.		Copper Cliff.
Mond Nickel Co.	Coniston		Coniston.
<b>BRITISH COLUMBIA</b>			
Consolidated Mining and Smelting Co. of Canada	Tadanac		Trail, Rossland, Kimberley.
Granby Consolidated Mining, Smelting and Power Co.	Anyox		Anyox.

\*Operating but not producing.

## NON-METALLIC MINERAL INDUSTRIES

## Actinolite Mining Industry

Name	Address	Location
<b>ONTARIO—</b> Actinolite Mining Co., Ltd.....	Bloomfield, N.J.....	Kaladar Township

## Asbestos Mining Industry

<b>QUEBEC—</b>		(King, Thetford Tp. Beaver, Coleraine Tp. British Canadian Vimy Ridge, Ireland Tp. Coleraine Tp. Boston Broughton Tp. Coleraine. Jeffrey, Shipton Tp. Thetford, Thetford Tp. Federal, Thetford Tp. Johnson's, Thetford Tp. Johnson's Coleraine Tp. Bell, Thetford Tp. Maple Leaf, Coleraine Tp. Thetford Mines. Thetford Mines. Thetford Mines. Thetford Mines. East Broughton.
Asbestos Corporation of Canada, Ltd.....	Canada Cement Bldg., Montreal.....	
Asbestos Fibre Co.....	342 Madison Ave., New York City N. Y.	
Asbestos Mines, Ltd.....	282 St. Catherine St., Montreal.....	
Canada Asbestos & Chrome Co.....	Black Lake.....	
Canadian Johns-Macville Co., Ltd.....	450 St. James St., Montreal.....	
Consolidated Asbestos, Ltd.....	Phillips Square, Montreal.....	
Federal Asbestos Co.....	Phillips Square, Montreal.....	
Johnson's Company.....	Thetford Mines.....	
Keasbey and Mattison Co.....	Ambler, Penn., U.S.A.....	
Maple Leaf Asbestos Corp., Ltd.....	Thetford Mines.....	
Northern Asbestos Co.....	Thetford Mines.....	
Pennington Asbestos Co.....	Thetford Mines.....	
Quebec Asbestos Corporation.....	East Broughton.....	
<b>ONTARIO—</b> Porcupine Asbestos Mining Syndicate.....	Timmins.....	Bowman, Deloro.

## Barytes Mining Industry

<b>NOVA SCOTIA—</b> Brandram-Henderson, Ltd.....	Montreal, P.Q.....	Lake Ainslie, Inverness County.
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## The Coal Mining Industry

<b>NOVA SCOTIA—</b>		<i>District—</i>
Acadia Coal Co., Ltd.....	Stellarton.....	Pictou.
Athol Coal Co.....	Athol.....	Cumberland.
Boston Coal Co.....	River Hebert.....	Cumberland.
Bras d'Or Coal Co.....	Little Bras d'Or Bridge.....	Cape Breton.
Canadian Coal Co., Ltd.....	Halifax.....	Cumberland.
Carter Coal Co.....	Maccan.....	Cumberland.
Cumberland Ry. and Coal Co.....	Glace Bay.....	Cumberland.
Dominion Coal Co., Ltd.....	Glace Bay.....	Cape Breton.
Emmerson Coal Co., Ltd.....	River Hebert.....	Cumberland.
Fundy Mining Co.....	Joggins Mines.....	Cumberland.
Greenwood Coal Co., Ltd.....	Thorburn.....	Pictou.
Indian Cove Coal Co., Ltd.....	Sydney Mines.....	Cape Breton.
Intercolonial Coal Mining Co., Ltd.....	Westville.....	Pictou.
Inverness Ry. and Coal Co.....	Inverness.....	Inverness.
Lawson Coal Co.....	Amherst.....	Cumberland.
Maritime Coal Ry. & Power Co., Ltd.....	Joggins Mines.....	Cumberland.
Minudie Coal Co., Ltd.....	River Hebert.....	Cumberland.
National Coal Co.....	New Glasgow.....	Cumberland.
Nova Scotia Steel and Coal Co.....	Sydney Mines.....	Cape Breton.
River Hebert Coal Co.....	River Hebert.....	Cumberland.
Victoria Coal Co., Ltd. (operating No. 2 Mine Minudie Coal Co.).....	River Hebert.....	Cumberland.
<b>NEW BRUNSWICK—</b>		<i>County—</i>
Avon Coal Co., Ltd.....	St. John.....	Queens.
Coakley, M.....	Minto.....	Sunbury.
Minto Coal Co., Ltd.....	St. John.....	Queens.
Miramichi Lumber Co., Ltd.....	Minto.....	Queens.
		(Sunbury.
Rothwell Coal Co., Ltd.....	Rothwell.....	Queens.
Welton, Harvey.....	Minto.....	Queens.
Welton & Henderson.....	Minto.....	Queens.
<b>SASKATCHEWAN—</b>		<i>Municipality—</i>
Addie, W.....	Estevan.....	Near Estevan.
Bienfait Mine.....	Bienfait.....	Near Bienfait.
Big Lump Coal Co., (formerly Bourguin & Smith).....	Estevan.....	Near Estevan.

## The Coal Mining Industry—Continued

Name	Address	Location
<b>SASKATCHEWAN—Concluded</b>		
Crescent Collieries, Ltd.	Bienfait.	<i>Municipality—</i> Near Bienfait.
Eastern Collieries of Bienfait, Ltd.	Estevan.	Near Estevan.
Estevan Coal and Brick Co., Ltd.	Box 210, Estevan.	Near Estevan.
Lignite Coal Mines, Ltd. (formerly Andrew A. Miller).	Taylorlton.	Taylorlton.
Manitoba and Saskatchewan Coal Co., Ltd.	503 Avenue Block, Winnipeg, Man.	Bienfait.
Pierce-McCallum Ltd. (formerly Bienfait Commercial Co.).	Bienfait.	Near Bienfait.
Shand Coal and Brick Co.	Shand.	Shand.
Western Dominion Collieries Ltd.	305 Trust and Loan Bldg., Winnipeg, Man.	Taylorlton.
<b>ALBERTA—</b>		
<i>Bituminous—</i>		
Blue Diamond Coal Co., Ltd.	602 Standard Bank Bldg., Toronto, Ont.	<i>District—</i> Brule.
Brazeau Collieries, Ltd.	Nordegg.	Nordegg.
Cadomin Coal Co., Ltd.	282 Main St., Winnipeg, Man.	Mountain Park.
Cannore Coal Co., Ltd.	Cannore.	Cascade.
Hillcrest Collieries Ltd.	Hillcrest.	Crowsnest.
International Coal and Coke Co., Ltd.	Coleman.	Crowsnest.
Luscar Collieries, Ltd.	708 Tegler Bldg., Edmonton.	Mountain Park.
McGillivray Creek Coal and Coke Co., Ltd.	Coleman.	Crowsnest.
Mohawk Bituminous Mines, Ltd.	414 Lancaster Bldg, Calgary.	Crowsnest.
Mountain Park Collieries, Ltd.	708 Tegler Bldg., Edmonton.	Mountain Park.
Pass Bituminous Collieries, Ltd.	Burmis.	Crowsnest.
West Canadian Collieries, Ltd.	Blairmore.	Crowsnest.
<i>Sub-bituminous—</i>		
Alexo Coal Co., Ltd.	Alexo.	Saunders.
Balkan Coal Co., Ltd.	Robb.	Coalspur.
Bighorn and Saunders Creek Collieries, Ltd.	Saunders.	Saunders.
Bryan Coal Co., Ltd.	Adams Bldg., Edmonton.	Coalspur.
Coal Valley Mining Co., Ltd.	806 McLeod Bldg., Edmonton.	Coalspur.
Dino, A. & Co. (formerly Superior Collieries, Ltd.).	Lovett.	Coalspur.
Foothills Collieries, Ltd.	222 Portage Ave., Winnipeg, Man.	Coalspur.
Reco Hard Coal Co., Ltd. (formerly Blackstone Coal Co., Ltd.).	Reco, via Edson.	Coalspur.
Saunders Ridge Coal Co., Ltd.	Merecoal.	Coalspur.
Saunders West Collieries, Ltd. (formerly Stanley, C.H.).	West Saunders.	Saunders.
Sterling Collieries, Ltd.	911 McLeod Bldg., Edmonton.	Coalspur.
<i>Lignite—</i>		
Ajax Coal Co., Ltd.	Medicine Hat.	Redcliff.
Alberta Block Coal Co., Ltd.	Drumheller.	Drumheller.
Anderson, W. J.	Sheerness.	Sheerness.
Atlas Coal Co., Ltd.	Drumheller.	Drumheller.
Banner Coal Co., Ltd. (formerly National Collieries, Ltd.).	Round Hill.	Camrose.
Bay Coal Co., Ltd.	Taber.	Taber.
Big Valley Collieries, Ltd.	Big Valley.	Big Valley.
Bray, Ed.	Alix.	Ardley.
Bush Mine Coal Co., Ltd.	Beverly.	Edmonton.
Caledonian Collieries, Ltd.	Drumheller.	Drumheller.
Canadian Coal Co., Ltd.	206 Quebec Bldg., Edmonton.	Edmonton.
Canadian Dinant Coal Co.	Dinant.	Camrose.
Canadian Pacific Railway Co.	Dept. of Natural Resources, Calgary.	Lethbridge.
Carbon Gem Mine Co.	Carbon.	Carbon.
Chappell Coal Co., Ltd.	Tofield.	Tofield.
City of Lethbridge Coal Mines.	Lethbridge.	Lethbridge.
Commonwealth Coal Co., Ltd. (formerly Oscar Collieries, Ltd.).	Sheerness.	Sheerness.
Consolidated Diamond Collieries, Ltd.	Lethbridge.	Lethbridge.
Co-Operative Coal Co.	Barnwell.	Taber.
Craig Coal Co., Ltd.	Drumheller.	Drumheller.
Davidson, Mrs. A. J. (formerly Ferndale Collieries, Ltd.).	5650 Ada Blvd., Edmonton.	Edmonton.
Dawson Coal Co., Ltd.	7 McDougall Court, Edmonton.	Edmonton.
Dobell Coal Co., Ltd.	138 St. Peter St., Quebec, Que.	Tofield.
Donaldson, C.S. Coal Co.	Suite 1, Hill Block, Lethbridge.	Lethbridge.
Elgin Coal Co., Ltd.	Drumheller.	Drumheller.
Ellis Coal Co., Ltd.	Box 46, Three Hills.	Carbon.
Excelsior Collieries, Ltd.	Wayne.	Drumheller.
Fraser-McKay Collieries, Ltd.	10055-101st St., Edmonton.	Edmonton.
Great West Coal Co., Ltd. (Black Diamond Mine).	10026-101st Ave., Edmonton.	Edmonton.
Great West Coal Co., Ltd., (Star Mine).	Aerial.	Drumheller.
Humberstone Mines, Ltd.	Beverly.	Edmonton.
11½-Grade Coal Co.	Drumheller.	Drumheller.
Ideal Coal Co.	Wayne.	Drumheller.
Jewel Collieries, Ltd.	Wayne.	Drumheller.
Keith and Fulton Coal Co.	Clover Bar.	Edmonton.
Kleenbinn Collieries, Ltd.	Eyremore.	Brooks.

## The Coal Mining Industry—Concluded

Name	Address	Location
<b>ALBERTA—Concluded</b>		
<i>Lignite—Concluded</i>		
Lakeside Coals, Ltd.	711 Tegler Bldg., Edmonton	District— Pembina.
Lethbridge Coal Co., Ltd.	Box 784, Lethbridge	Lethbridge.
Majestic Collieries, Ltd.	Taber	Taber.
Marcus Coal Mines, Ltd.	10366-104th St., Edmonton.	Edmonton.
McLenhan, John A. and Co. (formerly Spicer Coal Co., Ltd.)	Dinant	Camrose.
Midland Collieries, Ltd.	Midlandvale	Drumheller.
Mid-West Collieries, Ltd.	Drumheller	Drumheller.
Newcastle Coal Co., Ltd.	Drumheller	Drumheller.
Newcastle Junior Mining Co.	Drumheller	Drumheller.
North American Collieries, Ltd.	909 Lancaster Bldg., Calgary	Lethbridge.
North Star Coal Co.	Cardiff	Pembina.
Ontalta Collieries, Ltd. (formerly Capital Collieries, Ltd.)	Rosedale Station	Edmonton.
Ottewell Coal Co.	Clover Bar	Drumheller.
Palisade Coal Co.	Three Hills	Carbon.
Parker Creek Collieries, Ltd. (formerly Ardley Hardite Collieries, Ltd.)	Ardley	Ardley.
Partridge Coal Co.	Rosedale Station	Drumheller.
Peerless Carbon Coal Mines, Ltd. (Consolidated with Peerless Carbon Collieries, Ltd.)	Carbon	Carbon
Penn Mine Coal Co. Ltd. (formerly Crown Coal Co.)	10651—92nd St., Edmonton	Edmonton.
Penn Mines Ltd. (formerly Edmonton Collieries Ltd.)	Fraser Flats, Edmonton	Edmonton.
Premier Coal Co., Ltd. (formerly Reed & Brown)	109th Ave., Edmonton	Edmonton.
Redcliff Brick and Coal Co., Ltd.	Box 135, Redcliff	Redcliff.
Rosedale Coal Co., Ltd.	Rosedale	Drumheller.
Rose Deer Coal Mining Co., Ltd.	Wayne	Drumheller.
Rosemount Coal Co., Ltd.	Rosedale Station	Drumheller.
Round Hill Collieries, Ltd.	Round Hill	Camrose.
Shannon Coal Co., Ltd.	Carbon	Carbon.
Stoney Creek Collieries, Ltd.	Camrose	Camrose.
Sturgeon Valley Collieries, Ltd.	Carbondale	Edmonton.
Sunbeam Coal Co., Ltd. (formerly Challenger Coal Co., Ltd.)	Ardley	Ardley.
Superior Grade Coal Co., Ltd.	Wayne	Drumheller.
Thomas, J. D., Coal Co.	Nacmire	Drumheller.
Tofield Coal Co., Ltd.	Tofield	Tofield.
Warder Collieries, Ltd. (formerly Vimy Coal Light & Power Co.)	Big Valley	Big Valley.
Warneboldt, Julius	Sheerness	Sheerness.
Western Commercial Co., Ltd.	Wayne	Drumheller.
Western Gem Coal Co., Ltd.	Drumheller	Drumheller.
<b>BRITISH COLUMBIA—</b>		
Canadian Collieries (Dunsmuir) Ltd.	600 Belmont Bldg., Victoria	Island.
Coalmont Collieries, Ltd.	Coalmont	Inland.
Corbin Coals Ltd.	Corbin	Crow's Nest Pass.
Crow's Nest Pass Coal Co.	Fernie	Crow's Nest Pass.
East Wellington Coal Co.	Box 250, Victoria	Island.
Fleming Coal Co. Ltd.	Merritt	Inland.
Granby Consolidated Mining, Smelting and Power Co. Ltd.	Cassidy	Island.
Keystone Coal Co. Ltd.	Merritt	Inland.
King & Foster	Box 655, Nanaimo	Island.
Middlesboro Collieries, Ltd.	Middlesboro	Inland.
Nanoose Wellington Collieries, Ltd.	Wellington	Island.
Princeton B.C. Colliery Co. Ltd.	Princeton	Inland.
Tulameen Valley Coal Mine	Princeton	Inland.
Western Fuel Corporation of Canada Ltd.	Nanaimo	Island.

## The Feldspar Mining Industry

<b>MINES—</b>		
<b>QUEBEC—</b>		
Bon Ami, Ltd.	Manchester, Conn., U.S.A.	Aylwin.
Cameron, Wm. & J. J.	Box 11, Buckingham	Buckingham Tp.
Gauthier Bros.	Box 226, Buckingham	Buckingham Tp.
Lapointe, E.	N. D. de la Salette	Portland W. Tp.
Larose, A. D.	Weir	Arundel Tp.
O'Brien and Fowler	Bk. of Nova Scotia Bldg., Ottawa, Ont.	Derry Tp.
Whittemore, Mrs. A.	Ottawa, Ont.	Derry Tp.
Winning, Bush	N. D. de la Salette	Portland Tp.

## The Feldspar Mining Industry—Continued

Name	Address	Location
<b>MINES—Concluded</b>		
<b>ONTARIO—</b>		
Anderson, J. G.	Lucknow	Dryden and Head Tps.
Checkley, H. R.	Sudbury	Dill Tp.
Craig, T. H.	Verona	Portland Tp.
Elizabeth Feldspar Mines Ltd.	24 Rose Ave., Toronto	Dill Tp.
Feldspars, Ltd.	293 Bay St., Toronto	Bedford, Portland & Loughborough Tps.
Feldspar Mines Corp. Ltd.	1507 Bank of Hamilton Bldg., Toronto	Monteagle Tp.
Forwie, J. A.	671 Johnson St., Kingston, Hartington	Monteagle Tp.
Gardner Feldspar Co.	Hartington	Monteagle Tp.
Genesee Feldspar Co.	82 Augustine St., Rochester, N.Y.	Monteagle Tp.
Industrial Minerals Corp.	805 Bank of Hamilton, Toronto	Monmouth Tp.
McQuire-Robinson	Parry Sound	Conger Tp.
Morrison, Wm.	517 Strathmore Blvd., Toronto	Conger Tp.
Pelto, Oscar	Quartz	Conger Tp.
Perth Feldspar & Mining Co., Ltd.	Perth	Bathurst Tp.
Rock Products Co.	Nicholas Bldg., Toledo, Ohio, U.S.A.	Bathurst Tp.
<b>MILLS:—</b>		
<b>ONTARIO—</b>		
Frontenac Floor and Wall Tile Co., Ltd.	Kingston	Kingston.
Industrial Minerals Corp.	805 Bank of Hamilton Bldg., Toronto	Toronto.

## The Fluorspar Mining Industry

<b>ONTARIO—</b>		
Industrial Minerals Corp.	Toronto	Near Wilberforce.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail	Rock Candy Mine, Grand Forks.

## The Graphite Mining Industry

<b>QUEBEC—</b>		
Canadian Graphite Corporation	425 Phillip's Place, Montreal	Boyer Township.
North American Graphite Co.	50 Spadina Ave., Toronto	Buckingham Tp.
Quebec Graphite Co., Ltd.	4 Fenchurch, London, E.C.	Lochaber Township.
<b>ONTARIO—</b>		
Black Donald Graphite Co., Ltd.	Calabogie	Brougham Township.
Graphite Refining Co. Ltd.	Port Elmsley	
Timmins Graphite Mines	1018 Canada Cement Bldg., Montreal	North Burgess Townshp.
	Que.	

## The Grindstone Mining Industry

<b>NOVA SCOTIA—</b>		
Mic-Mac Grindstone Co., Ltd.	Woodburn	Woodburn.
Sutherland, Jas. W.	Quarry Id.	Quarry Id.
<b>NEW BRUNSWICK—</b>		
Miramichi Quarry Co., Ltd.	Quarryville	Quarryville.
Read Stone Co., Ltd.	Sackville	Stonehaven.
<b>BRITISH COLUMBIA—</b>		
MacDonald, J. A. and C. H.	Vancouver	Newcastle Island

## The Gypsum Mining Industry

<b>NOVA SCOTIA—</b>		
Higginson Manufacturing Co.	Newburg, N.Y.	Newport Station, Hants Co.
Ingonish Gypsum Co., Ltd.	Canada Cement Bldg., Montreal, Que.	Ingonish Beach, Victoria Co.
Iona Gypsum Products Co.	Box 60, Sydney	Iona.
Newark Plaster Co.	Ottawa Brook	Ottawa Brook, Victoria Co.
Rock Plaster Corporation	40 Rector St., New York, N.Y.	Walton, Hants Co.
St. Croix Gypsum Mining & Mfg. Co., Ltd.	St. Croix	St. Croix, Hants Co.
Wentworth Gypsum Co., Ltd.	Windsor	Wentworth, Hants Co.
Windsor Plaster Co., Ltd.	Windsor	Windsor, Hants Co.
<b>NEW BRUNSWICK—</b>		
Albert Manufacturing Co.	Hillsborough	Hillsborough, Albert Co.
<b>ONTARIO—</b>		
Ontario Gypsum Co., Ltd.	Paris	Caledonia, Seneca Tp.
		Lythmore, Oneida Tp.
<b>MANITOBA—</b>		
Manitoba Gypsum Co., Ltd.	Box 3057, Winnipeg	Gypsumville.
<b>BRITISH COLUMBIA—</b>		
Basque Ranch Ltd.	Ashcroft	Basque Ranch.
Henderson, Robert	754 Hamilton St., Vancouver	

## The Iron Oxide Mining Industry

Name	Address	Location
<b>QUEBEC—</b>		
Argall, Thos. H. ....	Three Rivers .....	Point du Lac, St. Maurice Co.
Canada Paint Co., Ltd. ....	572 William St., Montreal .....	Red Mill, Champlain Co.
Montmorency Paint Products Co., Ltd. ....	6 d'Aiguillon St., Quebec .....	Montmorency Co.
<b>BRITISH COLUMBIA—</b>		
McDonald, R. W. ....	823 Fifth Ave. West, Calgary, Alta. ....	Windermere District.
Thompson, J. H., & Davidson, J. G. ....	1641 Woodland Drive, Vancouver .....	Near Mons.

## The Magnesite Mining Industry

<b>QUEBEC—</b>		
International Magnesite Co., Ltd. ....	Calumet .....	Hartington Township.
North American Magnesite Producers, Ltd. ....	Magnesite .....	{Grenville Township.
Scottish Canadian Magnesite Co. ....		{Grenville Township.

## The Mica Mining Industry

<b>QUEBEC—</b>		
Ahearn, W. ....	538 McLaren St., Ottawa, Ont. ....	Hull Tp.
Barrett, J. A. ....	53 Breeze Hill Ave., Ottawa, Ont. ....	Hull Tp.
Blackburn Bros. ....	Union Bank Bldg., Ottawa, Ont. ....	Templeton Tp.
Boessnou, F. ....	Cantley .....	
Capital Mica Co., Ltd. ....	538 McLaren St., Ottawa, Ont. ....	Hull Tp.
Carman, O. ....	Farm Point .....	Hull Tp.
Chenier, Z. E. ....	Rockland, Ontario .....	Grenville Tp.
Charette, Nap. ....	Gatineau Point .....	
Flynn, H. T. ....	106-8 Montcalm St., Hull. ....	Hull Tp.
Larrabee, P. H. ....	Glenlivet .....	
McLaurin, John .....	St. Rose de Lima .....	Templeton.
McGlashan, R. J. & Co. ....	Cantley .....	Hull Tp.
Martin, A. G. ....	Ottawa, Ont. ....	Cameron Tp.
Mineral Products Co., Ltd. ....	330 Bay St., Toronto, Ont. ....	
Nault, J. B. ....	River Desert .....	Cameron Tp.
Paul, David .....	Bouchette .....	
Perkins, Mining Co. ....	Gatineau Point .....	Templeton Tp.
Reginald, E. ....	Mont Laurier .....	Robertson Tp.
Wallingford, Geo. & Chas. ....	Perkins .....	Templeton Tp.
Wallingford, A. ....	Ottawa, Ont. ....	Templeton Tp.
Watts and Noble .....	217 Lyon St., Ottawa, Ont. ....	Portland W. Tp.
<b>ONTARIO—</b>		
Austin, Louis .....	Perth Road .....	
Bennett, H. V. ....	Perth .....	South Elmsley
Brown and Fahey .....	Elgin .....	Loughborough Tp.
Green, Geo. ....	Perth Road .....	
Kent Bros. and Estate J. M. Stoness .....	Kingston .....	Loughborough Tp.
Lee, W. W. ....	Bedford Mills .....	
Loughborough Mining Co., Ltd. ....	Sydenham .....	Loughborough Tp.
Mahon Bros. ....	Rideau Ferry .....	North Burgess Tp.
McNaughton, G. D. ....	Sydenham .....	
Orser, F. ....	Tory Hill .....	
Orser, S. H. ....	Bancroft .....	Faraday Tp.
Martin, A. G. ....	231 Besserer St., Ottawa .....	Loughborough Tp.
Rock Lake Mica Mining Co. ....	Temple Bldg., Toronto .....	Storrington Tp.
Tory Hill Marble & Mica Co. ....	Tory Hill .....	Glanmorgan Tp.
Wright, Robert .....	Carleton Place .....	

## Mineral Waters Industry

<b>QUEBEC—</b>		
Abenakis Springs Co. ....	Abenakis Springs .....	St. Francois du Lac.
Roy, Cyprien .....	St. Germain .....	L'Islet Plate.
Veillet, D. & Co. ....	St. Genevieve de Batiscan .....	
<b>ONTARIO—</b>		
Borthwick, W. ....	10 Albert St., Ottawa .....	Gloucester Tp.
Caledonia Springs Co., Ltd. ....	2716 St. Urbain St., Montreal, Que. ....	{Caledonia Springs.
		{Bourget.
Deneault, F. ....	Bourget .....	Bourget.
Goderich Mineral Water Co. ....	Goderich .....	Goderich.
Gurd, Charles & Co., Ltd. ....	1016 Bleury St., Montreal, Que. ....	Caledonia.
Sanitaris, Ltd. ....	Arnprior .....	Pakenham.

## Natro-Alunite Mining Industry

Name	Address	Location
BRITISH COLUMBIA— Alunite Chemical Corp., Ltd.	Esquimalt	Kyuquot Sound.

## The Natural Gas Industry

		<i>Field</i>
NEW BRUNSWICK— New Brunswick Gas & Oilfields, Ltd.	Box 196, Moncton	Stony Creek, Albert Co.
ONTARIO— Allied Gas and Oil Co. (formerly Clover Gas & Oil Co.)	Welland	Moulton Tp.
Attercliffe Gas Co.	Attercliffe	Canboro Tp.
Azoff Gas Co.	Canboro	North Cayuga Tp.
Beer, Geo.	Binbrook	Binbrook Tp.
Bennett, J. B.	Ridgetown	Howard Tp.
Bertie Natural Gas Co., Ltd.	Ridgeway	Bertie Tp.
Binbrook Gas Co.	Binbrook	Binbrook Tp.
Caledon Natural Gas Fields, Ltd.	Hamilton	Caledon Tp.
Canada Cement Co., Ltd.	Montreal, Que.	Wainfleet Tp.
Canby, B. F.	R. R. 2, Marshville	Wainfleet Tp.
Canboro Gas & Oil Co.	Selkirk	Canboro, Cayuga N., and Seneca Tps.
Canfield Natural Gas Co.	Canfield	Euphemia Tp.
Castle Oil and Gas Co.	Imperial Bk. Chambers, Niagara Falls	Willoughby Tp.
Chippawa Development Co., Ltd.	Chippawa	Caistor and Gainsboro Tps.
Chippawa Oil and Gas Co., Ltd.	Tavistock	Wainfleet and Gainsboro Tps.
Coleman, J. A.	Wellandport	Bayham, Binbrook, Caistor, Canboro, Cayuga N., Cayuga S., Charlottetown, Dunn, Glanford, Houghton, Humberstone, Malahide, Middleton, Moulton, Oakland, Oneida, Onondaga, Rainham, Seneca, Townsend, Walpole, Walsingham N., Walsingham S., Windham, Woodhouse Tps.
Dominion Natural Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Walpole Tp.
Duffy, W.	Hagersville	Dunn and Sherbrooke Tps.
Dunn Natural Gas Co., Ltd.	Dunnville	Sherbrooke Tp.
Eastside Gas Co.	R. R. 2, Lowbanks	Wainfleet Tp.
Ellsworth, F.	Port Colborne	Humberstone Tp.
Empire Limestone Co.	19 Hudson St., Buffalo, N.Y.	Rainham Tp.
Erie Gas and Oil Syndicate	Fisherville	Rainham Tp.
Fisherville Gas Co.	Fisherville	Seneca Tp.
Hamilton Gas and Oil Co.	17 Main St., E., Hamilton	Canboro Tp.
Hart and Harrington	Attercliffe Station	Moulton Tp.
Hoffman, Albert	Dunnville	Walpole Tp.
Hoover, J. E.	Selkirk	Bertie, Crowland, Humberstone Tps.
Industrial Natural Gas Co., Ltd.	Thorold	Tilbury East and Gosfield South Tps.
Jasperson, B.	Kingsville	Dunn Tp.
Jones, J. S.	Port Maitland	Rainham Tp.
Kindy, D. and Son	Selkirk	Charlottetown, Middleton, Rainham, Seneca, Walpole Tps.
King, Ralph Gas Co.	Hamilton	Moulton Tp.
Lalor, F. R.	Dunnville	Moulton Tp.
Lawson, J. J.	Stromness	Gainsboro Tp.
Lincoln Gas Syndicate	Canboro	Moulton Tp.
Maple Leaf Gas Co.	48 St. John's Rd., Buffalo, N.Y.	Glanford and Seneca Tps.
Marshall, Jas.	Hamilton	Seneca Tp.
May, A. G.	Selkirk	Bayham, Houghton and Middleton Tps.
Medina Natural Gas Co., Ltd.	Box 339, Chatham	Wainfleet Tp.
Michener, E. C.	Marshville	N. Cayuga and Oneida Tps.
Midfield Gas Co., Ltd.	9 Maple Ave, Hamilton	Cayuga N. and Rainham Tps.
Nelles Corners Gas Co.	Cayuga, R.R. 4	Sherbrooke Tp.
Niece, Hosea and Son	Lowbanks	Anabel Tp.
Northern Gas and Gasoline Co.	Hepworth	Rainham Tp.
North Shore Gas Co., Ltd.	Selkirk	Eniskillen Tp.
Oil Springs Oil & Gas Co., Ltd.	Oil Springs	Onondaga Tp.
Onondaga Oil and Gas Co.	Cainsville	Cayuga N., Cayuga S., and Dunn Tps.
Patterson, W. C.	Jamestown, N.Y.	Dover West Tp.
Petrol Oil & Gas Co., Ltd.	301 York Bldg., Toronto	Crowland Tp.
Pilkington Bros., Ltd.	St. Catharines	Oneida, Onondaga, and Seneca Tps.
Port Colborne-Welland Natural Gas and Oil Co., Ltd.	Port Colborne	N. Dorchester Tp.
Progressive Oil and Gas Co.	212 Main & Hughson St., Hamilton	

## The Natural Gas Industry—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		<i>Field</i>
Provincial Natural Gas & Fuel Co. of Ontario, Ltd.	103 Queen St., Niagara Falls.	Bertie, Crowland, Humberstone and Willoughby Tps.
Root, Mrs. Esther	Dunnville	Cayuga, S. Tp.
Sarnia Gas & Oil Co.	145½ Front St., Sarnia	Sarnia Tp.
Smith, R. H.	Lowlands	Moulton Tp.
Southern Ontario Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Mersea, Romney, Raleigh & Tilbury East Tps.
Sparham, A. F.	Caledonia	Glanford To.
Springvale Gas & Oil Co., Ltd.	Hagersville	Walpole Tp.
Sterling Gas Co., Ltd.	Port Colborne	Humberstone, Moulton, Sherbrooke and Wainfleet Tps.
Stevensville Gas & Fuel Co., Ltd.	Stevensville	Bertie Tp.
Sundy Gas and Oil Co.	Dunnville	Canboro Tp.
Union Natural Gas Co. of Canada, Ltd.	48½ Market St., Chatham	Dawn, Dover W., Raleigh, Romney and Tilbury E. Tps.
United Gas Companies, Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Canboro, Cayuga N., Moulton Seneca and Wainfleet Tps.
Vacuum Oil & Gas, Ltd.	509 Lumsden Bldg., Toronto	Dover West and Middleton Tps.
Van Sickle, A. W.	Onondaga	Onondaga Tp.
Wainfleet-Moulton Gas Co.	R. R. 1, Lowbanks	Moulton and Wainfleet Tps.
<b>MANITOBA—</b>		
Haskill, E. C.	Box 64, Treherne	Treherne.
<b>ALBERTA—</b>		
Alberta Clay Products Co., Ltd.	Box 672, Medicine Hat	Medicine Hat.
British Petroleum, Ltd.	918 Rogers Bldg., Vancouver, B.C.	Wainwright.
Canada Cement Co., Ltd.	Canada Cement Co., Bldg., Montreal	Dauntless.
Canadian Pacific Railway Co.	Montreal, Que.	Medicine Hat.
Canadian Western Natural Gas, Light, Heat & Power Co., Ltd.	215-6th Ave. West, Calgary	Near Barnwell; Bow Island; Brooks; Dunmore; and Calgary.
Canadian Western Power & Fuel Co.	Redcliff	Redcliff.
Community Oil Wells, Ltd.	Medicine Hat	Many Island Field.
Dominion Glass Co., Ltd.	285 Beaver Hall Hill, Montreal, Que.	Redcliff.
Hedley Shaw Milling Co., Ltd.	Medicine Hat	Medicine Hat.
Higgins-Suffield Gas Co.	Suffield	Suffield.
Many Islands Oil & Gas Co.	Medicine Hat	Many Island Field.
Medicine Hat, Corporation of	Medicine Hat	Medicine Hat.
Northwestern Utilities Ltd.	10305 Jasper Ave., Edmonton	Viking.
Northwest Co., Ltd.	56 Church St., Toronto, Ont.	
Ogilvie Flour Mills Co., Ltd.	Medicine Hat	Medicine Hat.
Redcliff Brick & Coal Co., Ltd.	Redcliff	Redcliff.
Royalite Oil Co., Ltd.	239-6th Ave., Calgary	Turner Valley.
Town of Bow Island	Bow Island	Bow Island.
Wetaskiwin, Corporation of	Wetaskiwin	Wetaskiwin.
United Electric & Engineering Co., Ltd.	1721-11th St. West, Calgary	Bassano.

## The Petroleum Industry

<b>NEW BRUNSWICK—</b>		<i>Field</i>
New Brunswick Gas & Oilfields, Ltd.	Box 196, Moncton	Stony Creek, Albert County.
<b>ONTARIO—</b>		
Allied Gas and Oil Co., Ltd.	Bothwell	Bothwell.
Anderson Bros. & Thompson	Oil Springs	Oil Springs.
Anderson, J. H.	Oil Springs	Oil Springs.
Armstrong, J. E.	Petrolia	Moore.
Atkinson, John	R. R. No. 3, Petrolia	Plympton.
Ayrheart, E. B.	Petrolia	Enniskillen.
Barker, W. B.	Petrolia	Mosa.
Barrett, C. H.	Petrolia	Enniskillen.
Bothwell Oil Co., Ltd.	120 Bay St., Toronto	Bothwell.
Bowles, Herbert	Petrolia	Sarnia.
Bradley, R. N.	Lowbanks	Enniskillen.
Brock, Thos. A.	Petrolia	Enniskillen.
Byers, Lydia, Executrix	Oil Springs	Oil Springs.
Canada Crude Oil Producers, Ltd.	Confederation Life Bldg., Toronto	(Enniskillen.
Canadian Dutch Oils, Ltd.	7 Adelaide St. E., Toronto	Oil Springs.
Canadian Oil Producing and Refining Co., Ltd.	Petrolia	Onondaga.
Carleton, Geo.	R. R. No. 2, Petrolia	(Enniskillen.
Carman and Fairbank	Petrolia	Oil Springs.
Chesher, Geo.	Petrolia	Enniskillen.
Colchester Oil and Gas Co.	Federal Bldg., Toronto	Bothwell.
Crocker-Parks Oil Co., Ltd.	Oil Springs	Sarnia.
Crotty and Elliott	Bothwell	Dover.
		Oil Springs.
		Bothwell.

## The Petroleum Industry—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		<i>Field</i>
Dennis, C.	Oil Springs.	Oil Springs.
Dennis, E.	Petrolia.	Plympton.
Dominion Petroleum Co., Ltd.	Glencoe.	Mosa.
Donald, Geo.	Oil Springs.	Oil Springs.
Duncan Bros.	Petrolia.	Moore.
Edward, F. H.	Petrolia.	Enniskillen.
Elliott, C. H.	Corunna.	Sarnia.
Fairbank, C. O. Estate.	Petrolia.	Bothwell.
Fairbank, J. H. Estate.	Petrolia.	Oil Springs.
Forsythe, A.	Petrolia.	Enniskillen.
Goudie, John.	Petrolia.	Enniskillen.
Hamlin, F. G.	Petrolia.	Enniskillen.
Hillis, James T. & Sons.	Oil Springs.	Oil Springs.
Houston, King, Estate of.	Petrolia.	Enniskillen.
Howlett, Fred.	Petrolia.	Enniskillen.
James, Mrs. Mary A.	Oil Springs.	Oil Springs.
Jewell, Dan.	Oil Springs.	Oil Springs.
Kelly, J. E.	Petrolia.	Petrolia.
Kerr, John, Estate.	Petrolia.	Enniskillen.
Kerr, Mrs. Ross.	Sarnia.	Enniskillen.
Kettle, Robt.	Petrolia.	Enniskillen.
Kirk, Elmer.	Petrolia.	Moore.
Levine, Herbert.	Petrolia.	Enniskillen.
Lewis, John J. Estate.	Oil Springs.	Oil Springs.
Lidster, Geo. H.	Wallacetown.	Dutton.
Loxton, Thos.	Petrolia.	Enniskillen.
McDonald, F. D.	Petrolia.	Enniskillen.
McDougal, D.	Petrolia.	Enniskillen.
McGillivray, Geo. A.	201 Mt. Pleasant Ave., London.	Oil Springs.
McKay, John.	Sarnia.	Sarnia.
McLean, L.	Glencoe.	Mosa.
McManus, Alex.	Wyoming.	Plympton.
McNaughton, J. D.	Glencoe.	Mosa.
McRichie, Mary D.	Bothwell.	Bothwell.
McRury, Alex.	Corunna.	Sarnia.
Mills, A. J.	Corunna.	Sarnia.
Morningstar, L. H.	Oil Springs.	Oil Springs.
Morningstar and Jackson.	Oil Springs.	Oil Springs.
Morris, Geo.	Petrolia.	Petrolia.
Mott and Mitchell.	Oil Springs.	Oil Springs.
Mott, E.	Oil Springs.	Oil Springs.
Mutual Oil Producing Co.	London.	Petrolia.
Ontario Lands & Oil Co., Ltd.	Petrolia.	Enniskillen.
Parker, H. W.	Petrolia.	Mosa.
Parks, Mrs. E. M.	Petrolia.	Enniskillen.
Paul, John D.	Wyoming.	Plympton.
Peace River Development Co.	1 Mail Building, Toronto.	Dunwich.
Petrol Oil & Gas Co.	301 York Bldg., Toronto.	Dover.
Rainsberry, Walter.	Petrolia.	Enniskillen.
Rawson, A.	Petrolia.	Enniskillen.
Schumacher, Bowen W.	112 W. Adams St., Chicago, Ill.	Enniskillen.
Smith, T. E.	Sarnia.	Sarnia.
Southern Ontario Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y.	Romey.
Sproule Bros.	Oil Springs.	Oil Springs.
Stonehouse Bros.	Petrolia.	Moore.
Tuer, J. T.	Plympton.	Plympton.
Union Natural Gas Co. of Canada, Ltd.	48½ Market Sq., Chatham.	Dover.
Walker Oil & Gas Co., Ltd., of Bothwell.	Windsor.	Bothwell.
Wallen, Alex. C.	Oil Springs.	Oil Springs.
Wallen, John, Estate.	Oil Springs.	Oil Springs.
Wallen & Wallen, Estate.	Oil Springs.	Oil Springs.
Warwick, Joseph.	Oil Springs.	Oil Springs.
Watt, P. J.	London.	Petrolia.
Winnett, J. W. G.	Bothwell.	Bothwell.
Woodward, John.	Oil Springs.	Oil Springs.
Woodward, Wm.	Oil Springs.	Oil Springs.
Yerks, Carlton.	Petrolia.	Petrolia.
Young, W. E.	Plympton.	Plympton.
<b>ALBERTA—</b>		
British Petroleums, Ltd.	36 Dominion Bank Chambers, Edmonton.	Wainwright Field.
Canada Southern Oil and Refining Company.	Black Diamond.	Turner Valley Oil Field.
Indiana-Alberta Oil Co.	101 8th Ave. E., Calgary.	Turner Valley Oil Field.
McLeod Oil Co., Ltd.	Grain Exchange Bldg., Calgary.	Turner Valley Oil Field.
Royalite Oil Co., Ltd.	239 6th Ave. W., Calgary.	Turner Valley Oil Field.

## The Pyrites Mining Industry

<b>QUEBEC—</b>		
Eustis Mining Co.	Eustis.	Ascot Tp.
<b>ONTARIO—</b>		
Grasselli Chemical Co., Ltd.	Hamilton.	Blythefield Tp.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining & Smelting Co. of Canada, Ltd.	Trail.	"Sullivan Mine", Kimberley

## The Quartz Mining Industry

Name	Address	Location
<b>NOVA SCOTIA—</b> River Dennis Sand & Clay Co., Ltd.....	River Dennis.....	Melford, Inverness Co.
<b>QUEBEC—</b> O'Brien & Fowler..... Silico, Limited.....	c-o M. J. O'Brien Ltd. Ottawa, Ont. 103 St. Francois-Xavier, Montreal.....	Derry Tp. Parish of St. Canut.
<b>ONTARIO—</b> Anderson, J. G..... Dominion Mines and Quarries, Ltd.....	Wanup. Canada Life Bldg., 46 King St. W., Toronto.....	District of Algoma (East Nee- bish Quarry and Killarney Quarry).
Gardner Feldspar Co..... Industrial Minerals Corp..... Johnson, Felix..... Mond Nickel Co., Ltd..... Orser-Kraft, Ltd.....	Hartington..... Toronto..... Kingston..... Coniston..... Perth.....	Neelon Tp. Bathurst, Drummond and South Sherbrooke Tps. Pittsburgh Tp. Deroche Tp.
Silica Sand Co..... Wright & Co.....	Kingston..... 960 Queen St., Sault Ste. Marie.....	
<b>BRITISH COLUMBIA—</b> Granby Consolidated Mining, Smelting & Power Co., Ltd.....	Anyox.....	Anyox.

## The Salt Industry

<b>NOVA SCOTIA—</b> Malagash Salt Products, Ltd.....	New Glasgow.....	Malagash, Cumberland Co.
<b>ONTARIO—</b> Brunner-Mond, Canada, Ltd..... Canadian Salt Co., Ltd.....  Dominion Salt Co., Ltd., The..... Elarton Salt Works Co., Ltd..... Exeter Salt Works Co., Ltd..... Goderich Salt Co., Ltd..... Kincardine Salt Co., Ltd..... Western Canada Flour Mills Co., Ltd..... Western Salt Co., Ltd..... Wingham Salt Co.....	Amherstburg..... 719 Sandwich St. W., Windsor.....  412 N. Front St., Sarnia..... Watford..... Exeter..... Goderich..... Kincardine..... 295 Macpherson Ave., Toronto..... 43 Victoria St., Toronto..... Wingham.....	Amherstburg, Essex, Co. Windsor and Sandwich, Essex Co. Sarnia, Lambton Co. Warwick, Lambton Co. Exeter, Huron Co. Goderich, Huron Co. Kincardine Goderich, Huron Co. Courtright, Lambton Co. Wingham, Huron Co.
<b>ALBERTA</b> Alberta Salt Co., Ltd.....	Edmonton.....	Fort McMurray

## The Sodium Carbonate Mining Industry

<b>BRITISH COLUMBIA—</b> Austin, C. W..... Coulson, John A. and Son..... Janes, O. O..... Lloyd-Campbell, Ltd.....	70 Mile House..... Burley..... 70 Mile House..... 422 Standard Bank Bldg., Vancouver.....	White Elephant. Near 70 Mile House. Coulson Spur.
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## The Sodium Sulphate Mining Industry

<b>SASKATCHEWAN—</b> Bishopric and Lent Co.....	Winton Place, Cincinnati, Ohio, U.S.A.	Frederick Lake.
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## The Talc and Soapstone Mining Industry

<b>QUEBEC—</b> Houle, J..... Robertsonville Soapstone Quarry Co.....	St. Antoine de Pontbriand..... Robertsonville.....	Thetford Tp. Thetford Tp.
<b>ONTARIO—</b> Asbestos Pulp Co., Ltd..... Gillespie Co., Ltd., Geo. H. (Mill)..... Grace Mining Co..... Henderson Mines, Ltd.....	Madoc..... Madoc..... 15 Genesee St. Buffalo, N.Y..... Madoc.....	Huntingdon Tp. Plant at Madoc. Vermillion Bar. Huntingdon Tp.
<b>BRITISH COLUMBIA—</b> Eagle Talc and Mining Co.....	W. G. Dickinson, 627 Yates St., Vic- toria.....	Victoria Mining Division.

## The Tripolite Mining Industry

<b>NOVA SCOTIA—</b> Oxford Tripoli Co., Ltd.....	Oxford.....	Silica Lake.
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## The Volcanic Ash Mining Industry

<b>SASKATCHEWAN—</b> Old Sol Manufacturing Co., Ltd..... Van Kel Cleansers, Ltd.....	805 Erin St., Winnipeg..... Swift Current.....	Waldeck. Waldeck.
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## STRUCTURAL MATERIALS AND CLAY PRODUCTS

## The Cement Industry

Name	Address	Location
<b>QUEBEC—</b> Canada Cement Co., Ltd..... La Cie de Ciment Unic, Ltd.....	Canada Cement Co., Bldg., Montreal 294 St. Catherine St., E. Montreal....	Montreal East. St. François de Sales.
<b>ONTARIO—</b> Canada Cement Co., Ltd.....  Hanover Cement and Stone, Ltd..... St. Mary's Cement Co., Ltd.....	Canada Cement Co., Bldg., Montreal Que..... 371 Bay St., Toronto..... 49 Wellington St. E., Toronto.....	(Belleville. Port Colborne. Hanover. St. Mary's.
<b>MANITOBA—</b> Canada Cement Co., Ltd.....  Commercial Cement Co., Ltd.....	Canada Cement Co Bldg., Montreal, Que..... 913 Union Bank Bldg., Winnipeg.....	Fort Whyte. Babcock.
<b>ALBERTA—</b> Canada Cement Co., Ltd.....  Marlboro Cement Co.....	Canada Cement Co. Bldg., Montreal, Que..... 12128-105th Ave, Edmonton.....	Exshaw. Marlboro.
<b>BRITISH COLUMBIA—</b> British Columbia Cement Co., Ltd.....	305 Belmont House, Victoria.....	Bamberton.

## The Clay Products Industry—Brick and Tile

<b>PRINCE EDWARD ISLAND—</b> Prince Edward Island Brick and Tile Co.....	Dept. of Agriculture, Charlottetown...	Richmond.
<b>NOVA SCOTIA—</b> Brooks, Geo..... Brooks, Stephen and Sons..... Miller, Jas. B..... Nova Scotia Clay Works, Ltd.....  Shaw, L. E., Ltd.....	New Glasgow..... Box, 359, New Glasgow..... Elmsdale..... Havelock St. Amherst.....  Avonport.....	Plymouth. New Glasgow. Barney's Brook. (Elmsdale. Pugwash. Avonport.
<b>NEW BRUNSWICK—</b> Ryan and Sons, M..... Tondreau, Joseph.....	Box 575, Fredericton..... Lamartine, Que.....	Fredericton, Woodstock, Rd. Bathurst
<b>QUEBEC—</b> Alex. Mills Brick Co., The..... Ascot Tile and Brick Co., Ltd..... Bell, W. and D..... Bouchard, Benjamin..... Citadel Brick, Ltd..... Granby Clay Products, Ltd..... Hodgins, David G..... La Cie de Briques de Béton..... L'Industrielle de St. Tite, Ltd..... Longpre, Emile..... Mathieu, Amédée..... McCrea Walley Brick Co., Ltd..... National Brick Co. of Laprairie, Ltd.....  Proulx Frères..... St. Lawrence Brick Co., Ltd., The..... Scott Brick Co., Ltd..... Suddard, E. P.....	Orms town..... Ascot Corner..... 1286 St. Valier St., Quebec..... Jonquières..... 421 St. Paul St., Quebec..... P.O. Box 266, Granby..... Shawville..... Amos..... St. Tite..... St. Felix de Valois..... Victoriaville..... Oliver Bldg., Sherbrooke..... Canada Cement Co. Bldg., Montreal.....  P.O. Box 384, Richmond..... 71 St. James St., Montreal..... 136 St. Peter St., Quebec..... Gaspé.....	Orms town. Ascot Corner. Little River Rd. Jonquières. Boischatel. Granby. Shawville. Amos. St. Tite. St. Felix de Valois. Victoriaville. Sherbrooke. (Delson. Laprairie. Richmond. Laprairie. Scott Junction. Douglas West.
<b>ONTARIO—</b> Alvinston Brick & Tile Co., Ltd..... Baker, Geo. E..... Bartonville Pressed Brick Co., Ltd..... Batchelor, Samuel..... Bay of Quinte Brick Works..... Bechtel Brick Co., Ltd., The..... Booth Brick & Lumber Co., The..... Brampton Pressed Brick Co..... Broadwell, B., and Son..... Caledon Mountain Shale Products..... Campbell, Neil F..... Canadian Fireclay Products, Ltd..... Canadian Pressed Brick Co., Ltd..... Chessman, Peter..... Cooksville Shale Brick, Co., Ltd..... Cooper, W. H..... Cornhill, James & Sons, Ltd..... Crang, Jethro.....	Box 26, Alvinston..... Arnprior..... 620 Lister Block, Hamilton..... Proton Station..... 239 Dundas St., Belleville..... Waterloo..... Box 61, New Toronto..... Brampton..... Kingsville..... 600 Bay St., Toronto..... R.R. No. 1, West Lorne..... 604 Adelaide St. E., Toronto..... 63 Ottawa St., S., Hamilton..... 670 King St., W., Hamilton..... 26 Queen St. E., Toronto..... 312 Clyde Bldg., Hamilton..... Grand Ave. E., Chatham..... 22 Thorne Crescent, Toronto.....	Alvinston. Arnprior. Bartonville. Proton Station. Belleville. Waterloo. Etobicoke. Brampton. (Near) Kingsville. Caledon. West Lorne. New Toronto. Bartonville. Hamilton. Cooksville. Hamilton. Chatham. Toronto.

## The Clay Products Industry—Brick and Tile—Continued

Name	Address	Location
<i>ONTARIO—Continued</i>		
Crawford Bros.	451 King St. W., Hamilton.	Hamilton.
Curtin, Frank.	R. R. No. 4 Lindsay.	Lindsay.
Curtis Bros.	Box 809, Peterboro.	Peterboro.
DeLaplante, J. E.	Dawes Rd., Coleman P.O., Toronto.	Toronto.
Deller, Albert and Son.	Brownsville.	Brownsville.
Deller Bros.	R. R. No. 2 Norwich.	(Near) Norwich.
Dolan, John.	R. R. No. 2 Watford.	Warwick.
Dominion Sewer Pipe and Clay Industries, Ltd.	Swansea.	Aldershot.
Donaldson, S. E.	R. R. 4, Harrison.	Fulton Mills.
Don Valley Brick Works.	114 Federal Bldg., Toronto.	Todmorden.
Douglas and Turner.	Wilkesport.	Wilkesport.
Dublin Brick & Tile Yard.	Dublin.	Dublin S.
Elliott, Charles.	Bluevale.	Bluevale.
Elliott, Wm.	Glenannan, P.O.	Glenannan.
Elliott, James, Jr.	519 Wellington St., W. Sault Ste. Marie.	E. Korah Tp.
Fort William Brick Co.	509 Victoria Ave., Fort William.	W. Fort William.
Fox, Geo. J.	Box 243, Dresden.	Dresden.
Frid Bros.	Macklin St. & Dundas Road, Hamilton.	Hamilton.
Gamage, C. R.	R. R. No. 2, Dresden.	Dresden.
Gardiner, Wm.	Box 83, Blenheim.	Blenheim.
Godfrey, Thomas & Co.	Carleton Place.	Carleton Place.
Grimsby Brick and Tile Co.	Grimsby.	Grimsby.
Hallatt, Herbert & Son.	Box 93, Comber.	Comber.
Hallatt, Wm.	Richards Bldg., Chatham.	Merlin.
Halton Brick Co., Ltd.	28 Symes Rd., West Toronto.	Near Terra Cotta.
Hamilton Pressed Brick Co.	Kensington Ave. S., Hamilton.	Hamilton.
Hill, A. W.	R. R. I., Coatsworth.	Stevenson.
Hill, Aaron.	Essex.	Essex.
Hircock Bros.	Box 83, Bowmanville.	Bowmanville.
Hitch, D. A.	Eire St. N., Ridgetown.	Ridgetown.
Hitch, Thos.	Box 254, St. Thomas.	St. Thomas.
Hodder, J. H.	Dutton.	Dutton.
Hohl, John.	R. R. No. 1, Wellesley.	Lisbon.
Houston Co., Ltd., The.	Tweed.	Tweed.
Howlett, Fred and Sons.	Box 3, Petrolia.	Petrolia.
Huntsville Brick and Tile Works.	Huntsville.	Huntsville.
Interprovincial Brick Co., Ltd.	30 Toronto St., Toronto.	(Cheltenham. Milton.
Jackson, W. B.	290 Rawdon St., Brantford.	Brantford.
Janes, D. A.	R. R. No. 1, Mt. Brydges.	Mt. Brydges.
Jamieson Lime Co.	Renfrew.	Renfrew.
Jasperson, B. Brick & Tile Yards.	Kingsville.	Coatsworth.
Jervis, W. J.	R. R. 3, Dorchester Station.	Dorchester Station.
Johnson, James.	R. R. No. 3, Pembroke.	Pembroke.
Kerr, Frederick.	Crediton.	Crediton E.
Kerr, Chas.	Goderich.	Ben Miller.
Koebel, Bros.	Box 54, St. Clements.	St. Clements.
Kruse Bros.	Seaforth.	Tuckersmith.
Labey Geo. A. and Son.	Foxboro.	Foxboro.
Lowes Bros.	R. R. No. 3, Chatham.	Chatham East.
McComb Chester.	Denfield.	Elginfield.
McCormick, Bros.	R. R. No. 5, Watford.	Kingscourt Junction.
McIvor Bros.	Buchanan St., Cobourg.	Cobourg.
McMahon, Robert.	R. R. No. 2, Kerwood.	Strathroy.
Martin, Thos. E.	Thamesville.	Thamesville.
Merkley's, Ltd.	9 Fraser Bldg., Ottawa.	Billings Bridge.
Middleton, C.	Wyoming.	Wyoming.
Milton Brick, Ltd.	Milton.	(Milton. Streetsville.
Miner, Manly F.	Kingsville.	Kingsville.
Missouri Tile Yard (W. H. Deller).	R. R. No. 4, Thorndale.	Thorndale.
Moscow Brick and Tile Works.	R. R. No. 1, Greenock.	Riverdale.
Napanee Brick & Tile Works.	R. R. 3, Napanee.	Napanee.
O'Dell, Wm. and Sons.	R. R. No. 1, Ingersoll.	Ingersoll.
Oilman Bros.	111 Macklin St., Hamilton.	Hamilton.
Ontario Denison Tile Co., Ltd.	24 Wyandotte St., Windsor.	(Tilbury. Fletcher.
O'Reilly, T. E.	320 Bay St., Ottawa.	Hog's Back.
Ottawa Brick Mfg. Co., Ltd., The.	53 Queen St., Ottawa.	Hog's Back.
Ott. Brick & Tile Mfg. Co., Ltd., The.	35 King St. E., Kitchener.	Kitchener.
Owen Sound Brick Co., Ltd., The.	859-2nd Ave. E., Owen Sound.	Owen Sound.
Parks, Henry W.	R. R. No. 2, Dresden.	Dresden.
Paxton, Fred R.	230 Queenston St., St. Catharines.	St. Catharines.
Pembroke Brick Co., The.	Pembroke.	Pembroke.
Phillips, Thomas & Son.	R. R. No. 2, Lucknow.	St. Helens.
Phinn Bros.	238 Briscoe St., London.	London.
Phippen & Field.	150 Dawes Rd., Toronto.	Toronto.
Piggott, Geo. & Co.	72 Guestville Ave., Toronto.	Mount Dennis.
Port Rowan Brick & Tile Co.	Port Rowan.	Port Rowan.
Price and Cumming.	Salisbury Ave., Humber Bay.	Humber Bay.
Price and Smith.	458 Greenwood Ave., Toronto.	Toronto.
Provincial Brick Plant.	Parliament Bldg., Toronto.	Mimico.
Red Star Brick & Tile Yard (W. H. Barnhardt).	Stratford.	Stratford.
Richardson, Jas. & Son.	Kerrwood.	Kerrwood.

## The Clay Products Industry—Brick and Tile—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Riselay Brick Co., Ltd.	Main St. W., Hamilton	Hamilton.
Russell, Jos.	40 Blake St., Toronto	Toronto.
Shale Products Ltd.	Inglewood	Inglewood.
Smith, Alex. & Son.	R. R. No. 2, Dutton	Dutton.
Snelgrove, A.	Beaverton	Beaverton.
Sproat, Wm. M.	R. R. No. 4, Seaforth	Seaforth.
Standard Brick Co., Ltd., The	363 Broadview Ave., Toronto	Toronto.
Steele, Edwin	Vankleek Hill	Vankleek Hill.
Stratford Brick, Tile and Lumber Co.	Mansion House, Stratford	Stratford.
Streetsville Brick Co., Ltd., The	410 Crown Office Bldg., Toronto	Streetsville.
Stroh, M. C.	Conestogo	Conestogo.
Sun Brick Co., Ltd.	1104 Bay St., Toronto	Todmorden.
Superior Brick and Tile Co., Ltd.	426 Victoria Ave., Fort William	Slate River.
Sutherland, W. A.	Box 293, Parkhill	Parkhill.
Tope, Richard, Estate	171 Queen St., E., Hamilton	Hamilton.
Toronto Brick Co., Ltd.	60 Victoria St., Toronto	Milton.
		Toronto.
Wagstaff, Charles	R. R. No. 4, Lindsay	Lindsay.
Wagstaff, A. H. & Co.	348 Greenwood Ave., Toronto	Toronto.
Wallace, R. & Son	66 First Ave. E., North Bay	North Bay.
Wein, Aaron	Crediton	Crediton.
Winch Bros.	Paisley	Paisley.
Windsor Brick & Tile Co.	203 Exchange Bldg., Windsor	Near Kingsville.
Woodslee Brick & Tile Yards	Woodslee	Woodslee.
Wright, Geo. & Sons	Comber	Comber.
<b>MANITOBA—</b>		
Alsip Brick, Tile & Lumber Co., Ltd.	200 Tribune Bldg., Winnipeg	Winnipeg.
Marion, Joseph A.	Box 30, St. Boniface	St. Boniface.
Sidney Brick & Clay Works, Ltd.	Sidney	Sidney.
Snyder, A. & Company, Ltd.	Box 1401, Portage la Prairie	Portage la Prairie.
Wardrop & Sons	Whitemouth	Whitemouth.
<b>SASKATCHEWAN—</b>		
Bruno Clay Works, Ltd.	Bruno	Near Bruno.
Dominion Fire Brick and Clay Products, Ltd., The	421 Hammond Bldg., Moosejaw	Claybank.
Elliott, W. H. & Son	1320-3rd Ave. N., Saskatoon	Saskatoon.
Excelsior Brick Co., Ltd., The	Prince Albert	Prince Albert.
Saskatchewan Penitentiary	Prince Albert	Prince Albert.
<b>ALBERTA—</b>		
Aeme Brick Co., Ltd., The	125 Alberta Block, Edmonton	Cannell.
Canada Cement Co., Ltd.	Canada Cement Co. Bldg., Phillips Sq., Montreal, Que.	St. Boniface.
Little, J. B. & Sons	9120-100 Ave., Edmonton	Sandstone.
Redcliff Brick and Coal Co., Ltd.	Box B 5, Redcliff	Riverdale.
Redcliff Pressed Brick Co., Ltd.	Box 87, Redcliff	Redcliff.
Redcliff Premier Brick Co., Ltd.	Box C 2, Redcliff	Redcliff.
<b>BRITISH COLUMBIA—</b>		
Armstrong Brick Works (C. & A. Oakland)	Armstrong	Armstrong.
Christian Community of Universal Brotherhood, Ltd., The	Grand Forks	Grand Forks.
Clayburn Co., Ltd.	850 Hastings St. W., Vancouver	Clayburn.
		Kilgard.
Furnell and Delong	Gabriola Is.	Gabriola Is.
Gorse, Percy A.	Salmon Arm	Enderby.
Johnston & Co., Ltd.	Kamloops	Near Kamloops.
North Saanich Brick and Tile Works	Sidney	Sidney.
Port Haney Brick Co., Ltd., The	846 Howe St., Vancouver	Port Haney.
Victoria Brick Co., Ltd.	3001 Douglas St., Victoria	Victoria.

## The Clay Products Industry—Clay Sewer Pipe

<b>NOVA SCOTIA—</b>		
Standard Clay Products, Ltd.	New Glasgow	New Glasgow.
<b>QUEBEC—</b>		
Standard Clay Products, Ltd.	St. John's	St. John's.
<b>ONTARIO—</b>		
Dominion Sewer Pipe and Clay Industries, Ltd.	Swansea	Swansea.
Hamilton and Toronto Sewer Pipe Co., Ltd., The	Wentworth St. N., Hamilton	Hamilton.
Ontario Sewer Pipe and Clay Products, Ltd.	Mimico	Mimico.

## The Clay Products Industry—Firebrick, Fireclay and Fireclay Products

Name	Address	Location
<b>NOVA SCOTIA—</b> Dominion Iron and Steel Co., Ltd..... Intercolonial Coal Mining Co., Ltd.....	Sydney..... Westville.....	Sydney. Westville.
<b>QUEBEC—</b> *Canada Firebrick Co., Ltd..... Montreal Terra Cotta Co., Ltd..... *Standard Clay Products, Ltd.....	371 Aqueduct St., Montreal..... 511 St. Catharines St. West, Montreal. P.O. Box 819, St. John's.....	Montreal. Lakeside. St. John's.
<b>ONTARIO—</b> Algoma Steel Corporation Ltd..... *Bailey, Geo., & Co..... National Fire Proofing Co. of Canada, Ltd.....	Sault Ste. Marie..... 321 Albany St., Toronto..... 601 Dominion Bank Bldg., Toronto....	Sault Ste. Marie. Toronto. Aldershot.
<b>ALBERTA—</b> Alberta Clay Products, Ltd.....	Box 672, Medicine Hat.....	Medicine Hat.
<b>BRITISH COLUMBIA—</b> Clayburn Co., Ltd.....	Credit Foncier Bldg., Vancouver.....	Clayburn.

\*Imported clays only.

## The Clay Products Industry—Stoneware and Pottery

<b>NEW BRUNSWICK—</b> Foley Pottery, Ltd.....	St. John.....	St. John.
<b>QUEBEC—</b> *Canadian Potteries, Ltd..... *Canada Stoneware Works..... *Dominion Sanitary Pottery Co., Ltd.....	2 Longueuil St., St. John's..... Iberville..... 189 St. James St., St. John's.....	St. John's. Iberville. St. John's.
<b>ONTARIO—</b> *Campbells R. Sons..... *Canadian General Electric Co..... *Canadian Porcelain Co., Ltd..... Davis, John and Sons..... *Dominion Insulator and Manufacturing Co., Ltd. Foster Pottery Co..... *Fontenac Floor and Wall Tile Co., Ltd.....	100 Locke St., S. Hamilton..... 212 King St. West, Toronto..... Paradise Rd., Hamilton..... 60 Heath St. W., Toronto..... Niagara Falls..... Main St. W., Hamilton..... Box 178 Kingston.....	Hamilton. Peterborough. Hamilton. Toronto. Niagara Falls. Hamilton. Kingston.
<b>ALBERTA—</b> Canada Pottery, Ltd..... Medalta Potteries, Ltd.....	Medicine Hat..... Medicine Hat.....	Medicine Hat. Medicine Hat.

\*Imported clays only.

## The Lime Industry

<b>NOVA SCOTIA—</b> Eastern Lime Co. (H. C. Burchell).....	Windsor.....	Windsor.
<b>NEW BRUNSWICK—</b> Peters, C. H. & Sons, Ltd..... Provincial Lime Co., Ltd..... Purdy and Green..... Randolph and Baker, Ltd..... Stetson, Cutler & Co., Ltd.....	Ward St., St. John..... 89 Water St., St. John..... 323 Main St., St. John..... Randolph..... Campbellton.....	Torreyburn. Lawlor's Lake. St. John. Randolph. Indiantown, St. John.
<b>QUEBEC—</b> Arnaud et Beaudry..... Baran, A. et Freres..... Beauregard, Delphis..... Bovin, Arthur..... Bouchard, Praxede..... Carswell, R. B..... Dominion Lime Co., The..... Fortin, Octave..... Heon, Octave..... Lalumiere, Joseph..... Laurentian Stone Co., Ltd..... Leclerc, Magloire..... Limoges and Co..... McCambly, Thomas..... Montreal Lime Co..... Naud, Francis..... Roy, Paul..... St. Maurice Lime Co., Ltd..... Standard Lime Co., Ltd.....	Joliette..... St. Dominique de Bagot..... North Stukely..... Pont Rouge..... Ste. Anne de Chicoutimi..... Bryson..... East Angus..... Val Brilliant..... St. Louis de Champlain..... St. Dominique de Bagot..... 250 Catherine St., Ottawa, Ont..... St. Dominique de Bagot..... 40 rue Pouport, Montreal..... Kazubazua..... 31 Prenouveau St., Montreal..... St. Marc des Carrieres..... 460 Cadieux St., Montreal..... Three Rivers..... Joliette.....	Joliette. St. Dominique de Bagot. North Stukely. Pont Rouge. Ste. Anne de Chicoutimi. Bryson. Lime Ridge. Val Brilliant. St. Louis de Champlain. St. Dominique de Bagot. Hull. St. Dominique de Bagot. Montreal. Kazubazua. Montreal. St. Marc des Carrieres. Montreal. St. Louis de France. St. Marc des Carrieres. St. Paul de Joliette. Montreal.
Stinson-Reeb Builders Supply Co., Ltd.....	230 Dorchester St. W., Montreal.....	Montreal.

## The Lime Industry—Concluded

Name	Address	Location
<b>ONTARIO—</b>		
Alabastine Co., Ltd., The.....	Paris.....	Elora.
American Cyanamid Co.....	511-5th Ave., New York City.....	(Teeswater.
Beachville White Lime Co., Ltd.....	Beachville.....	Niagara Falls.
Biederman, Albert G.....	Golden Lake.....	Beachville.
Brummer-Mond (Canada), Ltd.....	Canadian Bank of Commerce Bldg., Toronto.....	Golden Lake.
Cameron, W. M.....	Carleton Place.....	Anderdon Township.
Canada Lime Co., Ltd.....	26 Queen St. E., Toronto.....	Carleton Place.
Chalmers Lime Works.....	689 Seventh St. West, Owen Sound.....	Coboconk.
Christie Henderson & Co., Ltd.....	201 Crown Office Bldg., Toronto.....	Owen Sound.
Dominion Sugar Co., Ltd.....	Chatham.....	(Hespler.
Gallagher Lime and Stone Co., Ltd.....	James Street, Hamilton.....	(Kelso.
Harvey, E., Ltd.....	183 Queen St. W., Guelph.....	Puslinch.
Jamieson, J. M.....	Foresters Falls.....	(Chatham.
Jamieson Lime Co.....	Hall St., Renfrew.....	(Wallaceburg.
Marshall, James.....	Hamilton.....	Hamilton.
Robertson Co., Ltd., D.....	26 Queen St. East, Toronto.....	Milton.
Standard White Lime Co., Ltd.....	15 Douglas St., Guelph.....	(Beachville.
Standard Chemical Co., Ltd.....	200 Bay St., Toronto.....	Guelph.
Toronto Brick Co., Ltd.....	60 Victoria St., Toronto.....	Eganville.
Toronto Lime Co., Ltd.....	26 Queen St. E., Toronto.....	Coboconk.
Vogan, Samuel.....	Gould St., Wiarton.....	Limehouse.
Wepler, Henry.....	R.R. No. 2, Priceville.....	Warton.
<b>MANITOBA—</b>		
Manitoba Gypsum Co., Ltd.....	Box 3057, Winnipeg.....	Glenneg Tp.
Moosehorn Lime Co., Ltd., The.....	214 Avenue Bldg., Winnipeg.....	Gypsumville.
Winnipeg Supply and Fuel Co., Ltd.....	214 Avenue Bldg., Winnipeg.....	Moosehorn.
<b>ALBERTA—</b>		
Loder's Lime Co., Ltd.....	Kananaskis.....	Stonewall.
Summit Lime Works.....	Box 273, Lethbridge.....	Kananaskis.
<b>BRITISH COLUMBIA—</b>		
Hedley Gold Mining Co., Ltd.....	Hedley.....	1½ miles east of Crow's Nest.
Pacific Lime Co., Ltd.....	602 Pacific Bldg., Vancouver.....	Hedley.
Rosebank Lime Co.....	602 Pacific Bldg., Vancouver.....	Blubber Bay, Texada Island.
		Esquimalt Harbour.

## The Stone Quarrying Industry—Granite

<b>NOVA SCOTIA—</b>		
Fairview Crushed Stone Co., Ltd.....	126 Roy Bldg., Halifax.....	Fairview.
Hoyt, C. M.....	Middleton.....	Nictaux W.
Nova Scotia Stone Co., Ltd.....	Lake William.....	Lake William.
Queensport Granite Co., Ltd.....	Queensport.....	Queensport.
Rice, Elmer.....	Lawrencetown.....	Nictaux W.
Rice, W. D.....	Middleton.....	Nictaux W.
<b>NEW BRUNSWICK—</b>		
Granite Street Pavement and Construction Co., Ltd.....	Evandale.....	Hampstead.
McGrattan, H. and Sons, Ltd.....	St. George.....	St. George.
Meating Epps, Company, Ltd.....	St. George.....	St. George.
Milne, Coutts & Co., Ltd.....	St. George.....	St. George.
Mooney, B. and Sons, Ltd.....	112 Queen St., St. John.....	Queens County.
O'Brien and Baldwin.....	St. George.....	St. George.
Public Works, Dept. of.....	City Hall, St. John.....	St. John.
<b>QUEBEC—</b>		
Baillargeon, P.....	St. John's.....	St. Luc.
B. and R. Granite Quarry.....	Beebe.....	Stanstead Tp.
Bedard, Elzear.....	Charlesbourg.....	Charlesbourg.
Bergeron, Joseph.....	Shawinigan Falls.....	Almaville.
Bergeron, P.....	Chicoutimi West.....	Rang St. Ignace.
Bernier, Aug.....	Roberval.....	Roberval.
Brodie's Limited.....	1070 Bleury St., Montreal.....	(Guenette.
Brunet, Joseph.....	663 Cote des Neiges Rd., Montreal.....	(Mt. Johnson.
Cloutier, Jos.....	Beebe.....	(Graniteville.
Delwaide and Goffin.....	Box 315, Chicoutimi.....	Chatham Tp.
Desrosiers, Albert.....	Beebe Jct.....	Beebe.
Duke-Price Power Co., Ltd.....	56 St. Peter St., Quebec.....	Rang St. Thomas.
Dumas, Art. & Cie. Enr.....	Riviere a Pierre.....	Near Beebe.
Duncan, Wm.....	R.R. I, Beebe.....	Alma and Maligne Rls.
Gagnon, Louis Philippe.....	St. David.....	Riviere a Pierre.
		Beebe.
		St. David.

## The Stone Quarrying Industry—Granite—Concluded

Name	Address	Location
<b>QUEBEC—Concluded</b>		
La Carrière Buisserie, Limitee.	St. Sebastien.	St. Sebastien.
Lacasse and Boulais.	Beebe.	Beebe.
Lacroix, Alphonse.	St. Sebastien Station.	St. Sebastien.
McIntosh, Robert.	R.R. 1, Beebe.	Beebe.
Norton, S. B.	Beebe.	Beebe.
Perran, Arthur.	Rivière à Pierre.	Rivière à Pierre.
Rigaud Granite Corporation.	11 Place d'Armes, Montreal.	Rigaud.
Riverin and Riverin Enr.	Chicoutimi Centre.	Bagotville.
Scotstown Granite Co., Ltd.	Scotstown.	Scotstown.
Silver Granite Co.	117 Cote d'Abraham, Beebe.	St. Samuel Station.
Stanhope Granite Quarries Co., Ltd.	Beebe.	Graniteville.
Vachon, Rodrigue et Frere.	St. Samuel Station.	St. Samuel de Gayhurst.
Voyer, F. et Frere.	Rivière à Pierre.	Rivière à Pierre.
Westmount Construction Co., Ltd.	28 Royal Ave., N.D.G., Montreal.	Chatham Tp.
<b>ONTARIO—</b>		
Brown, Robert.	376 Sparks St., Ottawa.	Leeds Tp.
Campbell and Lattimore.	146 King St. West, Toronto.	Findley.
Corporation of City of Fort William.	City Hall, Fort William.	Fort William.
Gordon, D. J., Granite Co.	18 Toronto St., Toronto.	Gananoque.
Hall, R. Reece.	Parry Sound.	McDougall Tp.
Horne, Wm., Granite Quarries.	377 Balmoral St., Winnipeg, Man.	Butler.
Mond Nickel Co., Ltd.	Coniston.	Drury and Levack Tps.
Morrison, Wm.	Coe Hill.	Coe Hill.
Ontario Rock Co., Ltd.	410 Crown Office Bldg., Toronto.	Belmont Tp.
Streets and O'Brien.	47 Yonge St., Arcade, Toronto.	Gananoque.
<b>BRITISH COLUMBIA—</b>		
B.C. Monumental Works, Ltd.	2250 Main St., Vancouver.	Granite Island.
Campbell & Ritchie Mon. Co.	507 Front St., Nelson.	Nelson.
Canadian Pacific Railway Company.	Montreal, Quebec.	Mountain Sub-division.
Coast Quarries, Limited.	837 Hastings St., Vancouver.	Granite Falls.
Gilley Brothers, Ltd.	902 Columbia St. W., New Westminster.	Coquitlam Municipality.
Nelson, City of.	Box 1028, Nelson.	Nelson.
Vancouver Granite Co., Ltd.	815 Bower Bldg., Vancouver.	Nelson Island.
Vernon Granite and Marble Company.	Box 285, Vernon.	Yale Dist.

## The Stone Quarrying Industry—Limestone

<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.	Sydney.	Pt. Edward, C.B.
Eastern Lime Co. (H. C. Burchell).	Windsor.	Windsor.
Nairn, John S.	24 Whitney Ave., Sydney.	Scotch Lake.
<b>NEW BRUNSWICK—</b>		
Peters, C. H., Sons, Ltd.	Ward St., St. John.	Torreyburn.
Provincial Lime Co., Ltd.	89 Water St., St. John.	Lawlor Lake.
<b>QUEBEC—</b>		
Bathurst Co., Ltd.	Bathurst, N.B.	Port Daniel.
Beaudry, Joseph P.	Taché St. Joliette.	Joliette.
Canada Carbide Co., Ltd.	Power Bldg., Craig St. W.	Bedford.
Canada Cement Company.	Phillips Square, Montreal.	Hull.
Charron, Arthur.	Village Bélanger.	Village Bélanger.
Chartrand, Alfred.	Village Bélanger.	Village Bélanger.
Château Richer Quarry, Ltd.	Château Richer.	Château Richer.
Cité de Salaberry de Valleyfield.	Valleyfield.	Cité de Salaberry de Valleyfield.
Commission du Parc Maisonneuve.	Hôtel-de-Ville, Montréal.	Montreal.
Consolidated Crushed Rock, Ltd.	3656 Masson St., Montreal.	Montreal.
Cousineau, Alderic.	2455 St. Urbain St., Montreal.	Montreal.
Deguire Quarry Company.	Suite 2, 207 St. James St., Montreal.	St. Laurent.
Delormier Quarry Company.	1701 Iberville St., Montreal.	Montreal.
Deraiche, F. X.	Port Daniel East.	Port Daniel East.
Deschambault Quarry Corporation.	52 rue St. Paul, Quebec.	St. Marc (Portneuf).
Desormeaux, Edgar.	2402 St. Hubert St., Montreal.	Cap St. Martin.
Doyon, Joseph.	Boischatel.	Boischatel.
Dupré, Arthur.	Ville St. Michel.	Ville St. Michel.
Durocher, Cyrille.	2383 Notre Dame East, Montreal.	Montreal East.
Dussault, Art.	St. Marc des Carrières.	St. Marc des Carrières.
Filion, Adélaide.	Lachute.	Lachute.
Fraser-Brace Engineering Co., Ltd.	83 Craig St. W., Montreal.	Timiskaming & Chelsea Falls.
Fuger and Smith, Ltd.	Pointe Claire.	Pointe Claire.
Gagnon, Martin.	3462 St. André St., Montreal.	Montreal.
Gauthier, J. T.	St. Michel.	St. Michel.
Gauthier, Oliver.	St. Marc des Carrières.	St. Marc des Carrières.
Gingras Frères, Ltd.	St. Marc des Carrières.	St. Marc des Carrières.
Giroux, J. H.	27 rue Plaisance, Three Rivers.	St. Louis de France.
Gravel, Ed. L.	Château Richer.	Château Richer.
Guibault Frères & Co., Inc.	Ste Elizabeth de Joliette.	Ste. Elizabeth.

## The Stone Quarrying Industry—Limestone—Continued

Name	Address	Location
<b>QUEBEC—Concluded</b>		
Institution des Souds-Muets.....	3600 rue St. Laurent, Montreal.....	St. Laurent.
Kennedy Const. Co., Ltd.....	137 McGill St., Montreal.....	St. François de Sales.
Lapointe, Jos.....	74 Monte St. Laurent, Cartierville.....	Cartierville.
Lapointe, Hector.....	St. Dominique.....	St. Dominique.
Laurentian Stone Co., Ltd.....	250 Catherine St., Ottawa, Ont.....	Hull.
Laval Quarry Co., Ltd.....	Cap St. Martin.....	Cap St. Martin.
Laerénier, Victor.....	1876 Delaroche St., Montreal.....	Cap St. Martin.
Maisonneuve Quarry Co., Ltd.....	4740 Iberville St., Montreal.....	Montreal.
Martineau, O. & Son, Ltd.....	371 Marie Anne Est, Montreal.....	Montreal.
Michaud, M. A.....	St. Joseph d'Alma.....	St. Joseph d'Alma.
Montreal Crushed Stone Co., Ltd.....	590 Union Ave., Montreal.....	St. Vincent de Paul.
Naud and Darveau.....	St. Marc des Carrières.....	St. Marc des Carrières.
O'Connor Bros.....	Huntingdon.....	Huntingdon.
Page, Jos.....	Charlesbourg West.....	Charlesbourg West.
Paquette, Damien.....	Village Bélanger.....	Cap St. Martin.
Paquette, Levi and Co.....	Cap St. Martin.....	Cap St. Martin.
Quebec Quarry, Ltd.....	Giffard Beauport.....	Beauport.
Quinland, John & Co.....	1165 Greene Ave., Westmount.....	Village Bélanger.
St. Laurent Quarry, Limited.....	Cap St. Martin.....	Cap St. Martin.
St. Vincent de Paul Penitentiary.....	St. Vincent de Paul.....	St. Vincent de Paul.
Standard Lime Co., Ltd.....	Joliette.....	St. Paul de Joliette.
Stone and Quarry, Ltd.....	800 Bellechasse St., Montreal.....	Montreal.
Therrien, Moïse.....	Village Bélanger.....	St. François de Sales.
Tremblay, Nap.....	Joffre Ave., Hull.....	Cap St. Martin.
Verreault, Elzéar.....	191 rue du Pont, Quebec.....	Hull.
Vezina, Joseph.....	Ste. Foy.....	Giffard.
Villars Quarry Co., Ltd.....	848 du Rosaire St., Montreal.....	Ste. Foy.
Wallace Sandstone Quarries, Ltd.....	120 St. James St., Montreal.....	Montreal.
White Grit Co.....	171 Waller St., Ottawa, Ontario.....	Philipsburg.
		Portage du Fort.
<b>ONTARIO—</b>		
Barton Tp. Quarry.....	Courthouse, Hamilton.....	Barton Tp.
Beachville White Lime Co., Ltd.....	Beachville.....	Beachville.
Bourgie, J. B.....	Embrun.....	Embrun.
Brûlé, E.D. and Sons.....	Billings' Bridge.....	Billings' Bridge.
Brunner Mond Canada Ltd.....	Amherstburg.....	Anderdon Tp.
Canada Crushed Stone Corporation, Ltd.....	Sun Life Bldg., Hamilton.....	Dundas.
Carleton, County of.....	71½ Sparks St., Ottawa.....	Osgoode-Gloucester-Nepean.
Cloutier & Grenon.....	Casselman.....	St. Isidore de Prescott.
Cook & Son, J. S.....	Warton.....	Amabel Tp.
Farmer, Geo. & Sons.....	45 Bertrand Ave., Ottawa.....	Osgoode Tp.
Farr, L. G., Mrs.....	Haileybury.....	Haileybury.
Foster, R. R.....	278 Echo Drive, Ottawa.....	City View.
Gallagher Lime Stone Co., Ltd.....	Upper James Street, Hamilton.....	Barton Tp.
Galt, Corporation of.....	Galt.....	Galt.
Gordon Crushed Stone Co., Ltd.....	137 Confederation Life Bldg., Toronto.....	Hagersville.
Gow, James.....	Fergus.....	Fergus.
Grenville Crushed Rock Co., Ltd.....	Merrickville.....	Oxford Tp.
Hagersville Contracting Co., Ltd.....	Hagersville.....	Walpole Tp.
Hagersville Quarries, Ltd.....	4 Flora St., St. Thomas.....	Walpole.
Haldimand County Good Roads System.....	Hagersville.....	Rainham Tp.
Halliday, Fred.....	Quarris P.O., Ottawa.....	Gloucester Tp.
Humberstone Tp. Quarry.....	Humberstone.....	Humberstone Tp.
Hydro Electric Power Commission of Ontario.....	190 University Ave., Toronto.....	Niagara and Stamford Tps.
Innerkip Stone Quarry.....	Innerkip.....	Innerkip.
Keeling, James.....	1179-16th St. E., Owen Sound.....	Owen Sound.
Kingdon Mining Smelting and Mfg. Co., Ltd.....	314 Beaver Hall Hill, Montreal, Quebec.....	Galetta.
Kingston Penitentiary.....	Portsmouth.....	Portsmouth.
Kirkfield Crushed Stone, Ltd.....	136 Confederation Life Bldg., Toronto.....	Kirkfield.
Langton, Thos.....	Coldwater.....	Coldwater.
Law Construction Co., Ltd., The.....	50 Yonge St., Arcade, Toronto.....	Windmill Point.
Longford Quarry Co., Ltd.....	6 Peter St., Orillia.....	Rama Tp.
Markus, Wm., Ltd.....	Pembroke.....	Pembroke Tp.
McDonnell Dibles and Covery.....	26 Victoria Sq., Montreal, Que.....	Richmond, Wendover.
McKay, Alex., Company, Ltd.....	2 Brown's Ave., Toronto.....	Owen Sound.
McQuigge, J. R.....	Arnprior.....	Arnprior.
Oliver Rogers Stone Co., Ltd.....	841 Fourth Ave. E., Owen Sound.....	Owen Sound.
Ontario Reformatory Industries.....	Parliament Bldg., Toronto.....	Guelph Tp.
Ontario Stone Corporation, Ltd.....	611 Excelsior Life Bldg., Toronto.....	North Orillia.
Pirson, John.....	Stevensville.....	Grantham Tp.
Public Highways, Dept. of.....	Toronto.....	
Queenston Quarries, Ltd.....	St. Davids.....	St. David's.
Quinlan, Robertson and Janin, Ltd.....	50 Notre Dame St. W., Montreal.....	Crookston.
Quinton & Brundige.....	Jasper.....	Near Brockville.
Robertson, D. & Co., Ltd.....	26 Queen St. E., Toronto.....	Milton.
Robillard, H. & Son.....	195 Nicholas St., Ottawa.....	Gloucester Tp.
Roddy, J. M.....	293 Division St., Kingston.....	Kingston.
Standard White Lime Co., Ltd.....	15 Douglas St., Guelph.....	Beachville.
Stormont, Dundas and Glengarry, Counties of.....	Court House, Cornwall.....	Finch Tp.
Thames Quarry Co., Ltd., The.....	St. Mary's.....	St. Mary's.
Thompson, W. G.....	Orillia.....	Orillia.
Walker Bros.....	Thorold.....	Stamford Tp.
Wehman, John.....	251 Division St., Kingston.....	Kingston.

## The Stone Quarrying Industry—Limestone—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Welland County Quarry.....	Court House, Welland.....	Humberstone Tp.
Welland Ship Canal.....	St. Catharines.....	St. Catharines.
Wentworth, County of.....	Court House, Hamilton.....	Waterdown.
Wentworth Quarries, Ltd.....	Vinemount.....	Saltfleet Tp.
Windmill Point Crushed Stone Co., Ltd.....	625 Confederation Life Bldg., Toronto.	Silver Mountain.
Winnipeg Roofing Co.....	264 Berry St., St. Boniface, Man.....	Ridgeway.
<b>MANITOBA—</b>		
Gillis Quarries, Ltd.....	Spruce and Richard Sts., Winnipeg...	Garson.
Tyndall Quarry Co., Ltd.....	1591 Erin St., Winnipeg.....	Winnipeg.
Winnipeg, City of.....	Winnipeg.....	Stony Mountain.
<b>ALBERTA—</b>		
Summit Lime Works.....	Lethbridge.....	Lethbridge.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining and Smelting Co. of Canada, Ltd.....	Trail.....	Fife.
Pacific Lime Co., Ltd.....	602 Pacific Bldg.....	Texada Island.
Powell River Co., Ltd.....	Powell River.....	Texada Island.

## The Stone Quarrying Industry—Marble

<b>QUEBEC—</b>		
Wallace Sandstone Quarry, Ltd.....	120 St. James St., Montreal.....	Phillipsburg, Missisquoi County.

## The Stone Quarrying Industry—Sandstone

<b>NOVA SCOTIA—</b>		
Wallace Sandstone Quarries, Ltd.....	120 St. James St., Montreal.....	Wallace.
<b>QUEBEC—</b>		
Blais, Jos., Engr.....	8 Mont Marie Ave., Levis.....	Levis Co.
Paquet, Adolphe.....	St. David.....	Levis Co.
Quebec Harbour Commission.....	Pointe-à-Carey, Quebec.....	Victoria Cove, Quebec.
Sherbrooke, The City of.....	Sherbrooke.....	Sherbrooke Co.
<b>ONTARIO—</b>		
Robertson, D. and Co. Ltd.....	26 Queen St. E., Toronto.....	Milton.
Rogers, F. & Co.....	1193 Queen St. W., Toronto.....	Glen Williams.
<b>BRITISH COLUMBIA—</b>		
McDonald, J. A. & C. H.....	1571 Main St., Vancouver.....	{Haddington Island. Newcastle Island.



# LIST OF PUBLICATIONS

PREPARED IN THE

## MINING, METALLURGICAL AND CHEMICAL BRANCH DOMINION BUREAU OF STATISTICS

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### STATISTICS OF MANUFACTURES—based chiefly on minerals.

General reports on the sections of manufactures covered by the Mining, Metallurgical and Chemical Branch are issued as follows:—

#### *Annual Printed Reports—*

**Iron and Steel and Their Products:** Pig Iron and Ferro-Alloys—Steel and Rolled Products — Castings and Forgings — Boilers, Tanks and Engines — Agricultural Implements — Machinery — Automobiles — Automobile Supplies — Bicycles — Railway Rolling Stock — Wire and Wire Goods — Sheet Metal Products — Hardware and Tools — Miscellaneous Iron and Steel Products.

**Manufactures of Non-Ferrous Metals:** Aluminium and Aluminium Ware—Brass and Copper Products—Lead, Tin and Zinc Products—Precious Metal Products—Electrical Apparatus and Supplies—Miscellaneous Non-Ferrous Metal Products.

**Manufactures of Non-Metallic Minerals:** Aerated Waters—Asbestos and Allied Products—Cement Products and Sand-Lime Brick—Coke and By-Products—Glass (blown, cut, ornamental, etc.)—Illuminating and Fuel Gas—Products from Imported Clay—Monumental and Ornamental Stone—Petroleum Products—Miscellaneous Non-Metallic Mineral Products, including (a) Artificial Abrasives, (b) Abrasive Products, (c) Artificial Graphite and Electrodes, (d) Gypsum Products, (e) Mica Products, (f) Miscellaneous Non-Metallic Mineral Products, n.e.s.

**Chemicals and Allied Products.** Coal Tar and its Products—Acids, Alkalies, Salts and Compressed Gases—Explosives, Ammunition, Fireworks and Matches—Fertilizers—Medicinal and Pharmaceutical Preparations—Paints, Pigments and Varnishes—Soaps, Washing Compounds and Toilet Preparations—Inks, Dyes and Colours — Wood Distillates and Extracts — Miscellaneous Chemical Products, including (a) Adhesives, (b) Baking Powder, (c) Boiler Compounds, (d) Celluloid Products, (e) Flavouring Extracts, (f) Insecticides, (g) Polishes and Dressings, (h) Sweeping Compounds, (i) Chemical Products, n.e.s.

*Annual Bulletins.*—In addition to the foregoing printed reports, a series of bulletins is issued annually, each of which presents the principal statistics relative to production: (a) in a particular industry, e.g. Automobiles—Petroleum Products, etc. (b) in each of the four main groups of industries. These are published in mimeograph form from time to time during the year as the necessary material becomes available.

#### *Monthly—*

**Production of Iron and Steel in Canada.**

**Coke Statistics for Canada.**

**Automobile Statistics for Canada.**

### SPECIAL REPORTS—

Report on the Consumption of Prepared Non-Metallic Minerals in Canada.

Report on the Consumption of Mine and Mill Materials in Canada.

Annual Summary Report on the Mineral Industry and the Manufacturing Industries Related Thereto.



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CANADA—DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
~~MINING, METALLURGICAL AND CHEMICAL BRANCH~~

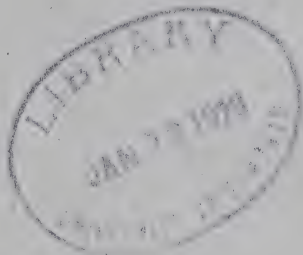
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ANNUAL REPORT  
ON THE  
MINERAL PRODUCTION OF  
CANADA

DURING THE CALENDAR YEAR

1926

Published by Authority of the Hon. James Malcolm, M.P.,  
Minister of Trade and Commerce



OTTAWA  
F. A. ACLAND  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1928

Price, 50 cents

# LIST OF PUBLICATIONS

PREPARED IN THE

## MINING, METALLURGICAL AND CHEMICAL BRANCH DOMINION BUREAU OF STATISTICS.

### MINERAL PRODUCTION (Mining and Metallurgy).

#### General Reports

##### Preliminary Reports (semi-annual) on the Mineral Production of Canada.

##### Annual Report on the Mineral Production of Canada. (In one volume).

A comprehensive record of the mining industry embodying historical and world data, detailed information on mineral production, imports and exports for Canada and general statistics relative to the mining industry on capital investment, employment, fuel consumption and power equipment arranged in 11 chapters each dealing with a particular branch of the industry. Statistics on production of trade in mineral products appear in detail in the appropriate chapters. A list of operating companies with their office and plant addresses is included. Fully indexed. Chapter titles are: Canada—The Provinces—The Gold Mining Industry—The Silver Mining Industry—The Nickel-Copper Industry—Miscellaneous Metal Mining Industries—The Non-Ferrous Smelting and Refining Industry—Non-Metal Mining Industries (excluding Fuels)—The Coal Mining, Coke, Natural Gas, Peat and Petroleum Industries—The Clay Products and Other Structural Materials Industries—Directory of Reporting Firms—Notes on the Methods of Computing Values—Index.

#### Coal—

##### Monthly and Quarterly Reports on Coal and Coke Statistics for Canada.

A condensed report on production, imports and exports of coal and coke is issued monthly, publication being made about the fifteenth of the next following month.

A more general review is published quarterly, showing statistics for each month, for the quarter, and for the year to date on the output by coal-mining districts and by provinces, imports and exports by ports and by kinds of coal, employment in coal-mining, and tonnage lost. There is also a section on coke showing production, imports, exports, distribution and consumption by months and by provincial groups.

##### Annual Report on Coal Statistics for Canada.

Text and tables showing for Canada, and for each of the coal-producing provinces, historical and current data on output, tonnage lost, disposition of coal from the mines, domestic and foreign shipments, exports and imports by ports, consumption of coal, prices, employment, salaries and wages paid, power equipment, capital investment, etc.

#### Annual Bulletins—

##### (a) MINERAL PRODUCTION—

*Metals.*—Arsenic—Cobalt—Copper—Gold—Lead—Nickel—Metals of the Platinum Group—Silver—Zinc—Miscellaneous Non-Ferrous Metals including Aluminium, Antimony, Chromite, Iron ore, Manganese, Mercury, Molybdenum, Tin, Tungsten.

*Non-Metals.*—Abrasives—Asbestos—Coal—Feldspar—Gypsum—Iron Oxides—Mica—Natural Gas—Petroleum—Quartz—Salt—Talc and Soapstone—Miscellaneous Non-Metallic Minerals including Actinolite, Barytes, Fluorspar, Graphite, Magnesite, Magnesium Sulphate, Mineral Waters, Natro-Alunite, Peat, Phosphate, Pyrites, Sodium Carbonate, Sodium Sulphate.

*Structural Materials.*—Cement—Clay and Clay Products—Lime—Sand and Gravel—Stone and Slate.

##### (b) MINERAL INDUSTRY.—Each bulletin of this group shows in synopsis, material to be published subsequently as one chapter of the annual report on the *Mineral Production of Canada*. These bulletins are published in mimeograph form from time to time during the year as the necessary material becomes available.

*By Industries.*—Gold Mining Industry including Alluvial Gold Mining, Auriferous Quartz Mining and Copper-Gold-Silver Mining—Silver-Cobalt and Silver-Lead-Zinc Mining Industry—Nickel-Copper Industry—Miscellaneous Metal Mining Industries—The Non-Ferrous Smelting and Refining Industry—The Coal Mining, Coke, Natural Gas, Peat and Petroleum Industries—Miscellaneous Non-Metal Mining Industries—The Clay Product and Other Structural Materials Industries.

*By Provinces.*—Nova Scotia—New Brunswick—Quebec—Ontario—Manitoba—Saskatchewan—Alberta—British Columbia—Yukon.

CANADA—DEPARTMENT OF TRADE AND COMMERCE  
DOMINION BUREAU OF STATISTICS  
MINING, METALLURGICAL AND CHEMICAL BRANCH

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## ANNUAL REPORT

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## STATISTICS OF PRODUCTION

In the collection of production data, the Dominion Bureau of Statistics makes a division between primary and secondary production. In the first-named class, there are separate sections for the collection of statistics on (a) **Agricultural Products**, (b) **Furs**, (c) **Fish**, (d) **Forest Products**, (e) **Mineral Products**.

In the second are included (a) **Manufacturing** and (b) **Construction**.

**Manufacturing** is subdivided into nine groups of industries, producing concerns being classified according to the principal component material of their major products. For example, manufactures of leather goods are classified under "Animal Products"; the pulp and paper industry under "Wood and Paper," etc. An outline of the scheme of classification in use for manufacturing industries is given below:—

### *Manufactures of:*

- (1) **Vegetable Products**, including—Coffee and Spices; Cocoa and Chocolate; Preserved and Canned Products; Pickles, Vinegar and Cider; Flour and Cereals; Bread and other Bakery Products; Macaroni and Vermicelli; Distilled and Brewed Liquors and Wines; Rubber Products; Starch and Glucose; Sugar; Tobacco Products; Linseed Oil and Oil Cake.
- (2) **Animal Products**, including—Fish and Fish Products; Dairy Factory Products; Meat and Meat Products; Leather and Leather Products; Furs and Fur Products.
- (3) **Textiles and Textile Products**, including—Cotton Textiles (Cloth, Yarn, Thread and Waste); Woollen Textiles (Cloth, Yarn, Blankets, Felt and Waste); Silk Products; Factory-Made Clothing, Carpets, Rugs and Mats; Cordage, Rope and Twine.
- (4) **Wood and Paper**, including—Pulp and Paper Mill Products; Paper Goods; Printing, Publishing and Lithographing; Saw and Planing Mill Products; Furniture, Carriages, Wagons and Sleighs; Wooden Containers; Woodenware; Turned Wood Products; and the Output of Similar Wood-Using Industries.
- (5) **Iron and Steel and their Products**, including—Pig Iron and Ferro-Alloys; Steel and Rolled Products; Castings and Forgings; Boilers, Tanks and Engines; Agricultural Implements; Machinery; Automobiles; Auto Parts and Accessories; Bicycles; Railway Rolling Stock; Wire and Wire Goods; Sheet Metal Products; Hardware and Tools; Miscellaneous Iron and Steel Products.
- (6) **Manufacture of Non-Ferrous Metals**, including—Aluminium and Aluminium Ware; Brass and Copper Products; Lead, Tin and Zinc Products; Precious Metal Products; Electrical Apparatus and Supplies; Miscellaneous Non-Ferrous Metal Products.
- (7) **Manufactures of the Non-Metallic Minerals**, including—Aerated Waters; Asbestos and Allied Products; Cement; Cement Products; Coke and By-Products; Gas, Illuminating and Fuel; Glass (blown, cut, ornamental, etc.); Lime; Petroleum Products; Products from Domestic Clays; Products from Imported Clays; Salt; Sand-Lime Brick; Stone, Monumental and Ornamental; Miscellaneous Non-Metallic Mineral Products, including (a) Artificial Abrasives, (b) Abrasive Products, (c) Artificial Graphite and Electrodes, (d) Gypsum Products, (e) Mica Products, (f) Miscellaneous Non-Metallic Mineral Products, n.e.s.
- (8) **Chemicals and Allied Products**, including—Coal Tar and its Products; Acids, Alkalies, Salts and Compressed Gases; Explosives, Ammunition, Fireworks and Matches; Fertilizers; Medicinal and Pharmaceutical Preparations; Paints, Pigments and Varnishes; Soaps, Washing Compounds and Toilet Preparations; Inks, Dyes, and Colours; Wood Distillates and Extracts; Miscellaneous Chemical Products including (a) Adhesives, (b) Baking Powder, (c) Boiler Compounds, (d) Celluloid Products, (e) Flavouring Extracts, (f) Insecticides, (g) Polishes and Dressings, (h) Sweeping Compounds, (i) Chemical Products n.e.s.
- (9) **Miscellaneous Products**, including—Brooms and Brushes; Electric Light and Power; Musical Instruments, etc.

The statistics of manufactures are also classified according to the **use** or **purpose** of the end product as follows:—

- (1) **Food**, including—Breadstuffs; Fish; Nuts; Fruits and Vegetables; Meats; Milk Products; Oils and Fats; Sugar; Infusions; Miscellaneous.
- (2) **Drink and Tobacco**, including—Beverages, alcoholic; Beverages, non-alcoholic; Tobacco.
- (3) **Clothing**, including—Boots and Shoes; Fur Goods; Garments and Personal Furnishings; Gloves and Mitts; Hats and Caps; Knitted Goods; Waterproofs; Miscellaneous.
- (4) **Personal Utilities**, including—Jewellery and Time-Pieces; Recreational Supplies; Personal Utilities, n.e.s.
- (5) **House Furnishings**.
- (6) **Books and Stationery**.
- (7) **Vehicles and Vessels**.
- (8) **Producers' Materials**, including—Farm Materials; Manufacturers' Materials; Building Materials; General Materials.
- (9) **Industrial Equipment**, including—Farming Equipment; Manufacturing Equipment; Trading Equipment; Service Equipment; Light, Heat and Power Equipment; General Equipment.
- (10) **Miscellaneous**.

## PREFACE

Annual statistical reports on the mineral production of Canada have been published for many years, first by the Geological Survey, later by the Mines Branch of the Department of Mines and since 1921 by the Dominion Bureau of Statistics. The present report is issued in continuance of this series but the material contained therein has been so arranged that a better conspectus of mining as an industry may be obtained than was possible in previous reports.

Statistics relating to the different minerals, and general statistical tables containing information regarding industrial groups have been prepared as formerly but in the present report a modification has been made in the arrangement of the material. Previous reports were divided into three sections (*a*) production, imports and exports, (*b*) industrial reviews, (*c*) directory. It has been thought advisable to bring together the data on production, imports and exports and the more general information regarding capital, employment, fuel and power so that each section may be complete in itself. The former division of the reports into three parts has thus given place to an arrangement in eleven chapters, each of which contains comprehensive data on the subject under review. The addition of an index in this report makes it possible readily to find all the references herein contained, to any particular commodity or industrial group.

To meet the demand for the names and addresses of concerns operating in the mineral industry, a revised list has been prepared and is included in this report.

Statistical reports on the mineral production of Canada issued by the Dominion Bureau of Statistics include the following publications: (*a*) Preliminary estimate of production issued on January 1 of each year; (*b*) Preliminary Report for the calendar year, printed in February; (*c*) Report on production during the six months ending June 30, distributed in August; (*d*) Bulletins giving finally revised production data for the calendar year on each mineral product, issued as the compilations are completed; (*e*) Annual Report on the Mineral Production of Canada, available towards the close of the year. Monthly bulletins on Coal and Coke Statistics are issued on the fifteenth of each month and these are supplemented by quarterly reports containing revised and more detailed information and a special annual report, published in June, which gives complete information on the Canadian coal mining industry and on the importation and distribution of coal in Canada, during the next preceding year.

The cordial thanks of the Bureau are tendered to the Dominion Department of Mines and to the several Provincial Departments of Mines, which have without exception, assisted materially in the preparation of the report. In reference to the co-ordination of mining statistics between the Provincial Departments and this Bureau, it has been found possible to arrange for the co-operative collection of monthly statistics of coal production with all the provinces in which such records are obtained, namely, Nova Scotia, New Brunswick, Saskatchewan, Alberta and British Columbia. In the field of general mining statistics, co-operative arrangements with the Ontario and Quebec Departments of Mines have been continued, thus preventing overlapping and duplication of work. During the year similar arrangements with British Columbia were completed, to the mutual advantage of provincial and federal departments. All data collected by the Bureau on mining statistics are made available to the Dominion Department of Mines.

The thanks of the Bureau are also tendered to the mine and smelter operators, for assistance given and information made available. The railway and other transportation companies, as well as smelter operators outside of Canada, have also furnished data, the receipt of which is gratefully acknowledged.

The report has been prepared under the direction of Mr. S. J. Cook, B.A., A.I.C., F.C.I.C., Chief of the Mining, Metallurgical and Chemical Branch of the Bureau, by Mr. W. H. Losee, B.Sc., who is in charge of the work on mineral statistics.

R. H. COATS,  
*Dominion Statistician.*

DOMINION BUREAU OF STATISTICS, OTTAWA,  
November 8, 1927.



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Table 1—Quantities and Values of Mineral Products from Canadian Sources, 1925 and 1926

Item	1925			1926		
	Quantity	Value	Per cent of total	Quantity	Value	Per cent of total
<b>METALLICS</b>						
Antimony..... lb.	1,751	\$ 206		1,596	\$ 281	
Arsenic (As <sub>2</sub> O <sub>3</sub> )..... lb.	3,434,137	130,302	0-05	5,074,677	146,811	0-06
Bismuth..... lb.	19,667	18,566		6,440	6,440	
Cobalt..... lb.	1,116,492	2,328,517	1-03	664,778	1,136,014	0-48
Copper..... lb.	111,450,518	15,649,882	6-90	133,094,942	17,490,300	7-29
Gold..... fine oz.	1,735,735	35,880,826	15-85	1,754,228	36,263,110	15-06
Iron ore sold for export..... tons	3,978	11,934		200	600	
Lead..... lb.	253,590,578	23,127,460	10-20	283,801,265	19,240,661	7-99
Molybdenite..... lb.	22,350	11,176		20,943	10,472	
Nickel..... lb.	73,857,114	15,946,672	7-05	65,714,294	14,374,163	5-99
Palladium, Rhodium, Iridium, etc..... fine oz.	8,288	648,969	0-28	10,024	640,178	0-27
Platinum..... fine oz.	8,698	1,028,192	0-46	9,521	923,607	0-39
Silver..... fine oz.	20,228,988	13,971,150	6-16	22,371,924	13,894,531	5-77
Zinc..... lb.	109,268,511	8,328,446	3-69	149,938,105	11,110,413	4-63
<b>Total.....</b>		<b>117,082,298</b>	<b>51-67</b>		<b>115,237,581</b>	<b>47-93</b>
<b>NON-METALLICS</b>						
<i>Fuels</i>						
Coal..... tons	13,134,968	49,261,951	21-76	16,478,131	59,875,094	24-88
Natural gas..... M cu. ft.	16,902,897	6,833,005	3-01	19,208,209	7,557,174	3-16
Peat..... tons	1,370	8,394				
Petroleum, crude..... bbl.	332,001	1,250,705	0-58	364,444	1,311,665	0-56
<b>Total.....</b>		<b>57,354,055</b>	<b>25-35</b>		<b>68,743,933</b>	<b>28-60</b>
<i>Other Non-Metallics</i>						
Actinolite..... tons	40	500		80	1,000	
Asbestos..... tons	290,389	8,988,360	3-96	279,403	10,099,423	4-16
Barytes..... tons	95	2,259		100	2,307	
Bituminous sands..... tons	1,148	4,594		528	2,112	
Feldspar..... tons	28,681	235,789	0-10	35,951	310,238	0-14
Fluorspar..... tons	3,886	19,234				
Graphite..... tons	2,569	158,763	0-07	2,727	194,860	0-08
Grinding pebbles..... tons	105	945		64	576	
Grindstones..... tons	2,562	124,165	0-05	2,695	151,227	0-06
Gypsum..... tons	740,323	2,389,891	1-05	883,728	2,770,813	1-15
Iron oxides..... tons	7,118	91,913	0-04	6,626	101,843	0-05
Magnesite..... tons	5,576	122,325	0-05	4,571	137,431	0-07
Mica..... tons	4,020	261,463	0-11	2,545	229,204	0-09
Mineral water..... Imp. gal.	190,134	28,413	0-01	215,356	29,721	0-01
Natro-alunite..... tons	20	1,000				
Phosphate..... tons	16	189		40	800	
Pyrites..... tons	15,605	58,899	0-03	17,845	63,899	0-02
Quartz..... tons	197,224	363,612	0-16	232,082	553,161	0-24
Salt..... tons	233,746	1,410,697	0-64	262,547	1,480,149	0-63
Silica brick..... M		2,665			130,702	0-05
Sodium carbonate..... tons	1,120	8,140		595	5,370	
Sodium sulphate..... tons	3,876	19,380		6,775	13,550	
Talc and soapstone..... tons	14,474	205,835	0-09	15,767	217,195	0-09
Volcanic dust..... tons	160	1,380		90	630	
<b>Total.....</b>		<b>14,497,746</b>	<b>6-36</b>		<b>16,496,211</b>	<b>6-84</b>
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</b>						
<i>Clay Products</i>						
Brick—Soft mud process..... M	27,701	521,739	0-23	28,235	556,573	0-24
..... Common..... M	51,214	753,970	0-33	78,158	1,145,490	0-49
Stiff mud process..... M	93,903	1,883,586	0-83	101,028	2,146,362	0-89
(wire cut)..... Common..... M	116,105	1,635,257	0-73	94,046	1,624,055	0-68
Dry press..... M	37,201	800,504	0-35	30,423	651,236	0-28
..... Common..... M	22,053	270,135	0-12	19,450	260,598	0-10
Fancy or ornamental brick..... M	524	26,320	0-01	462	24,057	0-01
Sewer brick..... M	2,485	52,382	0-02	6,546	117,194	0-05
Paving brick..... M				122	5,015	
Firebrick..... M	6,197	305,332	0-13	4,195	192,276	0-08
Fire clay..... tons	623	6,544		2,513	23,258	0-01
Fire clay blocks and shapes.....		36,567	0-02		54,064	0-02
Hollow blocks..... tons	115,576	1,093,397	0-49	142,061	1,314,650	0-55
Roofing tile..... No.	78,479	6,323		17,018	1,562	
Floor tile (quarries)..... sq. ft.	140,927	28,338	0-02	195,011	43,854	0-02
Drain tile..... M	14,552	401,503	0-18	14,258	396,018	0-16
Sewer pipe, copings, flue linings, etc..... tons	73,791	1,440,269	0-64	75,996	1,480,776	0-61
Pottery, glazed or unglazed.....		267,255	0-12		320,135	0-13
Bentonite..... tons				30	150	
<b>Total.....</b>		<b>9,529,691</b>	<b>4-23</b>		<b>10,357,323</b>	<b>4-32</b>
<i>Other Structural Materials</i>						
Cement..... bbl.	8,116,597	14,046,764	6-20	8,707,021	13,013,283	5-42
Lime..... bush.	10,256,542	3,387,652	1-49	11,825,736	3,781,484	1-57
Sand and gravel..... tons	11,018,647	3,220,410	1-42	17,112,798	4,941,434	2-06
Stone—						
Granite..... tons	971,718	2,014,535	0-89	1,064,423	1,574,627	0-65
Limestone..... tons	4,643,853	5,049,563	2-22	5,283,763	5,657,328	2-35
Marble..... tons	3,046	254,922	0-12	5,295	521,572	0-22
Sandstone..... tons	87,506	145,757	0-06	112,347	112,347	0-04
<b>Total.....</b>		<b>28,119,543</b>	<b>12-40</b>		<b>29,602,075</b>	<b>12-31</b>
<b>Grand total.....</b>		<b>226,583,333</b>	<b>100-00</b>		<b>240,437,123</b>	<b>100-00</b>

Table 2—Increase or Decrease in Quantities and Values of Mineral Products from Canadian Sources, in 1926 as Compared with 1925

Item	Increase (+) or Decrease (—)		Increase (+) or Decrease (—)	
	Quantity	%	Value	%
<b>METALLICS</b>				
Antimony..... lb.	— 155	— 8.9	+	36.4
Arsenic (As <sub>2</sub> O <sub>3</sub> )..... lb.	+ 1,640,540	+ 47.7	+	12.6
Bismuth..... lb.	— 13,227	— 67.3	—	65.4
Cobalt..... lb.	— 451,714	— 40.5	—	51.2
Copper..... lb.	+21,644,424	+ 19.4	+	11.7
Gold..... fine oz.	+ 18,493	+ 1.0	+	1.0
Iron ore sold for export..... tons	— 3,778	— 94.8	—	94.9
Lead..... lb.	+30,210,687	+ 11.9	—	*
Molybdenite..... lb.	— 1,407	— 6.3	—	6.3
Nickel..... lb.	— 8,142,820	— 11.1	—	7.3
Palladium, Rhodium, Iridium, etc..... fine oz.	+ 1,736	+ 20.9	—	1.4
Platinum..... fine oz.	+ 823	+ 9.4	—	10.2
Silver..... fine oz.	+2,142,936	+ 10.6	—	0.6
Zinc..... lb.	+40,669,594	+ 37.2	+	33.4
<b>Total.....</b>			<b>— 1,844,717</b>	<b>— 1.6</b>
<b>NON-METALLICS</b>				
<i>Fuels</i>				
Coal..... tons	+ 3,343,163	+ 25.4	+	21.5
Natural gas..... M cu. ft.	+ 2,305,312	+ 13.6	+	10.5
Peat..... tons	— 1,370	—	—	
Petroleum, crude..... bbl.	+ 32,443	+ 9.7	+	4.8
<b>Total.....</b>			<b>+11,389,878</b>	<b>+ 19.8</b>
<i>Other Non-Metallics</i>				
Actinolite..... tons	— 40	— 100.0	+	100.0
Asbestos..... tons	+ 10,986	+ 3.7	+	12.3
Barytes..... tons	— 5	— 5.2	—	2.1
Bituminous sands..... tons	— 620	— 54.1	—	54.1
Feldspar..... tons	+ 7,270	+ 25.3	+	31.5
Fluorspar..... tons	— 3,886	—	—	
Graphite..... tons	+ 158	+ 6.1	+	22.7
Grinding pebbles..... tons	— 41	— 39.1	—	39.1
Grindstones..... tons	+ 133	+ 5.2	+	21.7
Gypsum..... tons	+143,405	+ 19.3	+	15.9
Iron oxides..... tons	— 492	— 7.0	—	11.0
Magnesite..... tons	— 1,005	— 18.1	—	12.3
Mica..... tons	— 1,475	— 36.7	—	12.3
Mineral waters..... Imp. gal.	+ 25,222	+ 13.2	+	4.6
Natro-alunite..... tons	— 20	—	—	
Phosphate..... tons	+ 24	+ 150.0	+	323.2
Pyrites..... tons	+ 2,240	+ 14.3	+	8.4
Quartz..... tons	+34,858	+ 17.6	+	52.1
Salt..... tons	+28,801	+ 12.3	+	4.9
Silica brick..... M	+ 2,665	—	+	
Sodium carbonate..... tons	— 525	— 46.9	—	34.1
Sodium sulphate..... tons	+ 2,899	+ 74.7	—	30.1
Talc and soapstone..... tons	+ 1,293	+ 8.9	+	5.5
Volcanic dust..... tons	— 76	— 43.8	—	54.4
<b>Total.....</b>			<b>+ 1,998,465</b>	<b>+ 13.7</b>
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</b>				
<i>Clay Products</i>				
Brick—Soft mud process Face..... M	+ 534	+ 2.0	+	6.6
Common..... M	+ 26,944	+ 52.6	+	51.9
Stiff mud process Face..... M	+ 7,125	+ 7.5	+	13.9
(wire cut) Common..... M	+ 22,059	+ 18.9	—	0.7
Dry press Face..... M	— 6,778	— 18.3	—	18.7
Common..... M	+ 2,603	+ 11.7	—	3.5
Fancy or ornamental brick..... M	— 62	— 11.9	—	8.7
Sewer brick..... M	+ 4,061	+ 163.4	+	123.7
Paving brick..... M	+ 122	—	+	
Firebrick..... M	+ 2,002	+ 32.3	—	37.0
Fire clay..... tons	+ 1,890	+ 303.3	+	255.4
Fire clay blocks and shapes.....			+	47.8
Hollow blocks..... tons	+ 26,485	+ 22.7	+	20.1
Roofing tile..... No.	+ 61,461	+ 78.4	+	75.3
Floor tile (quarries)..... sq. ft.	+ 54,084	+ 38.3	+	54.7
Drain tile..... M	— 294	— 2.1	—	1.4
Sewer pipe, copings, flue linings, etc..... tons	+ 2,205	+ 2.9	+	2.8
Pottery, glazed or unglazed.....			+	19.7
Bentonite..... tons	+ 30	—	+	
<b>Total.....</b>			<b>+ 827,632</b>	<b>+ 8.6</b>
<i>Other Structural Materials</i>				
Cement..... bbl.	+ 590,424	+ 7.2	—	7.3
Lime..... bush.	+ 1,569,194	+ 15.2	+	11.6
Sand and gravel..... tons	+ 6,094,151	+ 55.3	+	53.4
Stone..... tons	+ 691,471	+ 12.1	+	5.3
<b>Total.....</b>			<b>+ 1,482,532</b>	<b>+ 5.2</b>
<b>Grand total.....</b>			<b>+13,853,790</b>	<b>+ 6.1</b>

\* See text, page 145.



Table 3—Mineral Production in Canada by Provinces, 1926—Concluded

	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Saskat- chewan	Alberta	British Columbia	Yukon
<i>Other Non-Metallics—</i>									
Con.									
Sodium carbonate, tons								595	
\$								5,370	
Sodium sulphate.. tons						6,775			
\$						13,550			
Talc and soapstone tons			885	14,882					
\$			38,209	178,986					
Volcanic dust..... tons						90			
\$						630			
Silica brick..... M	1,358			1,307					
\$	64,461			66,241					
<b>Total.....</b>	<b>1,367,621</b>	<b>559,386</b>	<b>10,835,961</b>	<b>2,930,494</b>	<b>461,461</b>	<b>14,180</b>	<b>24,808</b>	<b>302,300</b>	
<i>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</i>									
<i>Clay Products</i>									
Brick—									
Soft mud process—									
Face..... M	10		7,836	20,389					
\$	200		196,829	359,544					
Common..... M	826		25,833	35,474	9,775	765	2,022	3,463	
\$	10,670		365,405	522,803	159,350	11,240	24,458	51,564	
Stiff mud process (wire cut)—									
Face..... M	1,262		17,156	76,078	3,181	1,252	951	1,148	
\$	25,139		442,738	1,537,450	45,778	35,365	21,111	38,781	
Common..... M	3,845	2,372	68,131	12,110	105	2,728	4,271	484	
\$	50,002	34,258	1,247,875	206,242	1,050	31,428	45,208	7,992	
Dry press—									
Face..... M				26,462		593	2,070	1,298	
\$				539,854		21,422	39,064	50,896	
Common..... M				3,055		159	13,236	3,000	
\$				39,689		2,138	164,771	54,000	
Fancy or orna- mental brick.. M			88	374					
\$			4,010	20,047					
Sewer brick..... M				6,397				149	
\$				111,620				5,574	
Paving brick.... M								122	
\$								5,015	
Fire brick..... M	30	25				737		3,403	
\$	1,901	1,372				39,456		149,547	
Fire clay..... tons	536	47				808		1,122	
\$	2,123	1,819				5,103		14,213	
Fire clay blocks and shapes..... \$	675					23,361		30,028	
Hollow blocks.... tons	5,141		33,627	76,794	2,511	4,400	12,591	6,997	
\$	60,615		281,342	710,595	29,132	44,000	115,008	73,958	
Drain tile..... No.	53		224	12,788	275	20	132	766	
\$	1,877		10,145	340,403	13,187	600	3,955	25,851	
Floor tiles (quarries).....sq. ft.				195,011					
\$				43,854					
Roofing tile..... No.				17,018					
\$				1,562					
Sewer pipe, copings, flue linings, etc. tons	11,532		6,311	48,176			7,140	2,837	
\$	209,465		153,954	835,206			197,225	84,926	
Pottery, glazed or unglazed..... \$		38,402		87,600			194,133		
Other products—									
Bentonite..... tons								30	
\$								150	
<b>Total.....</b>	<b>\$ 362,667</b>	<b>75,851</b>	<b>2,702,298</b>	<b>5,356,469</b>	<b>248,497</b>	<b>214,113</b>	<b>804,933</b>	<b>592,495</b>	
<i>Other Structural Materials</i>									
Cement..... brl.			3,727,377	3,398,860	612,155		423,766	544,863	
\$			4,535,386	4,792,857	1,572,401		873,621	1,239,018	
Lime..... bush.	453,797	477,226	2,849,635	6,522,747	685,389		108,309	728,633	
\$	59,777	196,477	766,116	2,051,446	251,269		39,517	416,882	
Sand and gravel.. tons	230,307	70,931	5,233,696	6,483,163	989,581	863,901	1,754,965	1,486,254	
\$	52,952	11,360	1,490,674	2,292,678	178,059	145,296	412,430	357,985	
Stone..... tons	92,315	19,108	2,305,734	3,622,042	101,571		3,759	253,061	
\$	150,792	99,545	3,728,228	3,157,288	357,884		13,890	358,247	
<b>Total.....</b>	<b>\$ 263,521</b>	<b>307,382</b>	<b>10,520,404</b>	<b>12,294,269</b>	<b>2,359,613</b>	<b>145,296</b>	<b>1,339,458</b>	<b>2,372,132</b>	
<b>Grand total.</b>	<b>\$ 28,873,792</b>	<b>1,811,104</b>	<b>25,956,193</b>	<b>84,702,296</b>	<b>3,073,528</b>	<b>1,193,394</b>	<b>26,977,027</b>	<b>65,622,976</b>	<b>2,226,913</b>



# ANNUAL REPORT ON THE MINERAL PRODUCTION OF CANADA DURING THE CALENDAR YEAR, 1926

## CHAPTER ONE

### CANADA

Canada's mineral industry dates back to the eighteenth century and is associated with the explorations of the early adventurers who came to establish a French colony in America. In 1604, Master Simon, a mining engineer who accompanied the celebrated explorer Champlain from France on an expedition under de Monts, discovered iron and silver in St. Mary's bay and copper at Cape d'Or, Nova Scotia. Champlain surveyed Cape Breton island in 1607 but made no note of the coal seams that were easily visible in the cliffs. The first written reference to coal in Nova Scotia was by Nicolas Denys in his description and natural history of Acadia published in Paris in 1672. This in fact was the first mention of coal on the North American continent.

During the year 1730 metallurgical operations were carried on along the north shore of the St. Lawrence river between Montreal and Quebec and bog iron ore was smelted on the St. Maurice river. The St. Maurice forges continued to operate until 1880.

As explorers moved westward other discoveries were made, one of the most interesting being the location of a deposit of argentiferous galena on lake Temiskaming less than ten miles from the present Cobalt camp.

During the years 1843-1863 iron ore was mined in Ontario, copper ore was produced in Quebec, alluvial gold was recovered from the gravels of the St. Maurice river, and lode mining of gold was carried on in Nova Scotia.

Little or no record is available of mineral discoveries in western Canada until the middle of the nineteenth century. Among the first of these was the finding of coal at Fort Rupert in 1835 and then in 1858 placer gold was reported along the Fraser and other rivers in British Columbia. These finds, and subsequent discoveries of copper-gold ores and silver-lead ores, put British Columbia in the van of the Canadian mineral producing provinces, a position this province maintained, except in the years 1899 and 1900, when placer gold production from the Yukon Territory was at its height, which position it held until 1907 when Ontario assumed the leadership it still enjoys.

Construction of the Canadian Pacific Railway across the continent which was completed in 1885, opened up new districts for the prospector. It was in 1883 that, in the course of blasting a cutting for the railway near Sudbury, Ontario, workers discovered the nickel-copper ore for which this area is now world-famed. Railway construction through the boundary district of British Columbia assisted in the development of the copper-gold and silver-lead -zinc deposits of that area and also of the coal beds of the Crowsnest Pass.

In 1903 when the Temiskaming and Northern Ontario Railway was being built through northern Ontario the rich silver ores of the Cobalt section were discovered. Prospectors followed the line of the railway and worked over the country on either side. This led to the discovery of silver in South Lorrain and Gowganda and later, gold in Porcupine and Kirkland lake. In 1922 prospectors went farther afield and found ores containing copper, zinc, gold and silver in what is now known as the Rouyn district of northwestern Quebec.

Manitoba's mineral industry now appears to be developing more rapidly so that the next few years may show outstanding progress in the mining industry of that province.

Each of these major discoveries has been the cause of a marked increase in Canada's mineral production. In 1886, the first year that the *Geological Survey* issued complete returns of mineral production, Canada's total mineral output value amounted to little more than \$10,000,000 or about \$2.23 per capita; in 1901, five years after the Yukon discoveries, production totalled nearly \$66,000,000 or \$12.16 per capita. This fell off to \$60,000,000 in 1904 but afterwards moved forward rapidly showing the results of the development of the silver properties of Cobalt and the increased production of nickel in the Sudbury area. Of the 9 million dollar increase in 1905 over 1904 in the value of Canada's mineral production, 6.3 millions were obtained from Ontario mines and of this 3.3 millions represented the increase in value of nickel production and 1.3 million dollars was credited to the increase in Ontario's silver production.

Since 1886 the value of Canada's mineral output has amounted in the aggregate to \$4,012,709,252. The boom year of 1920 showed the greatest production of any year on record until the output of 1926 was recorded.

Production in 1926 was valued at \$240,437,123 or \$25.61 per capita, an increase of 6.1 per cent over the 1925 output of \$226,583,333 or \$24.19 per capita and 6 per cent over the previous record total established in 1920. The value of the 1926 output was 36 per cent greater than it was ten years before; 203 per cent in excess of what it was 20 years ago and 907 per cent beyond the figure of 30 years ago.

In 1926 Canada stood first in the world's production of asbestos, nickel and cobalt, and according to the *Year Book of the American Bureau of Metal Statistics*, the Dominion ranked third in the world's production of gold and silver, fifth in lead and copper and seventh in zinc. In the year under review Canada produced 95 per cent of the world's nickel, 80 per cent of the asbestos, 55 per cent of the cobalt, 9 per cent of the gold, 8.9 per cent of the silver, 8 per cent of the lead, 4.5 per cent of the zinc, and 4 per cent of the copper.

Although Canada showed increases in quantities of most of the metals, yet owing to modifications in the methods used in computing values of certain metals, noted elsewhere in this report, the total value of the metallics produced in 1926 was less than in the preceding year so that when making comparisons with the figures for former years it is necessary to note carefully just how the values have been computed. In particular the data for copper, lead and zinc must be so examined. A complete description of the methods used is contained in an appendix to this report.

**METALLICS.**—More arsenic was produced than in 1925, but the value of the output was lower owing to the prevailing low prices because of the lessened demand for arsenic in the manufacture of insecticides.

Cobalt production was reduced due to the competition from producers in the Belgian Congo. The limited world market for this metal at the present time is supplied by Canadian and African producers in about equal proportions.

Copper production showed gains in every province, but more particularly in British Columbia. The improvement in Ontario figures as now reported was not so noticeable as it would have been under the former method of compilation. That is to say, production of converter copper at the refineries did not show so great an improvement as did the output of the matte from the smelters. Then, also the more conservative system of evaluation adopted in 1926 whereby copper in matte exported was valued at 10 cents per pound and the Ontario production of copper either as blister or in other forms was valued at the average price obtained by the producers, tended to reduce the aggregate value for the metal much below the totals formerly recorded, when copper in matte produced was valued on the basis of quotations for electrolytic copper.

Gold production from Canadian ores was greater than in any other year on record. Towards the close of the year, the Hollinger mine was mining and milling more ore than ever before. The McIntyre mine commenced sinking a shaft to the 4,000-foot level to tap the orebody at depth. Mines in Kirkland lake increased their production and development was carried on in many other properties in the district.

In the neighbouring province of Quebec much prospecting and development work was done. The Noranda smelter was being built to treat the ores of the Horne mine and various other properties in that district and the railway extension from the main line of the Canadian National to Rouyn was completed.

Production of gold from British Columbia deposits was only 3 per cent greater than in 1925 while placer gold for the Yukon showed a reduction of 46 per cent in output.

Ontario contributed 85 per cent of Canada's output of gold; British Columbia added nearly 13 per cent; the Yukon yielded upwards of 1 per cent. Production from various other sources was very small even in the aggregate.

Lead production mostly from the Consolidated Mining and Smelting Company, Limited, of Trail, B.C., treating Sullivan ores chiefly but also ores in less quantities from other mines, reached a new tonnage record. Contributing to this new aggregate in addition to Trail and the silver-lead-zinc mines of British Columbia, were the Kingdom lead mine at Galetta, Ontario; the Quebec property at Notre Dame des Anges; and the properties in the Mayo district of the Yukon. Canada's output of lead is many times in excess of domestic requirements; as a consequence the exports of lead from Canada to the Orient and to Europe are rather large items in the country's foreign trade.

Prior to 1926 the practice was to evaluate the lead output of the Dominion at the average Montreal price for the year but as the greater part of the British Columbia output and all of the Quebec production, are sold on the basis of London quotations it was decided in 1926 to use the London price for lead produced in British Columbia, the Yukon and Quebec. The Ontario output is sold in Montreal and in this case the actual sales value is used. In making this change, the resulting value of the Canadian output was brought below that of 1925 even though the quantity was nearly 12 per cent greater, but it was thought the new valuation more nearly approached the actual value of the Canadian production of this metal.

Exports of nickel in matte and speiss reached greater tonnages in 1926 than in the preceding year but the refinery production dropped below the totals for 1925 so that the aggregates both for quantity and value were less than in the preceding year. Despite this seeming setback the nickel-copper industry made very appreciable progress in 1926. Ambitious programs of extension and development were laid out and some of the work was undertaken. Production of sulphuric acid from the bessemer converter gases was carried on successfully at the Mond smelter and at the end of the year the plant was increased to double its previous capacity.

Silver production showed an increase of 10.6 per cent in quantity over the total for the previous year but owing to the drop in price the value of production was slightly less than in 1925. Among the largest silver producers in Canada is the Sullivan mine which, although primarily a world-renowned lead and zinc mine, produced more than 4.5 million ounces of silver in 1926. The Premier mine in northern British Columbia produced more than 3 million ounces. In Ontario the largest producers were the Nipissing mine with an output of 1.9 million ounces and the Keeley mine with 1.7 million ounces. The Frontier Lorrain mine produced slightly more than a million ounces and the Castle Tretheway slightly less than a million ounces in 1926.

Canadian zinc production in 1926 increased 37 per cent in quantity and 33 per cent in value over the totals for 1925 and constituted a record. Refined zinc is produced at Trail, British Columbia, from the silver-lead-zinc ores of the West Kootenay district but the greater part of the output from this province is derived from the ores of the Sullivan mine at Kimberley, B.C. Zinc concentrates are exported to Belgium from the Tetreault silver-lead-zinc property of Quebec. No other provinces in Canada produced zinc in 1926 but development work on copper-zinc properties in Manitoba and Quebec, and on a zinc property in the Sudbury district near Chelmsford, Ontario, was carried on throughout the year. No change has been made in the method of computing quantities of zinc in making up the mineral production figures, but a slight change in the method of evaluation is to be noted. In former reports, it was customary to determine the value of the zinc production on the basis of prices quoted on the St. Louis market, which is the recognized trading centre for zinc in America. But little Canadian zinc is sold either in the United States or on the basis of the markets in that country; most of Canada's exports of zinc are marketed in the Orient and in Europe, and in both cases settlement is made on London prices; so it seemed reasonable and indeed more accurate to adopt London quotations in making up zinc values and this has been done in the present report.

**FUELS AND OTHER NON-METALLICS.**—Non-metallic minerals including coal showed a gain of 18.6 per cent in value over the totals for 1925. Coal production was the most outstanding among the non-metallics. In 1926 the value of coal produced was \$59,875,094 as against \$49,261,951 in 1925. In fact the value of the coal output was greater than the value of any other Canadian mineral being 65 per cent greater than gold which was second on the list. The greatest gain

was in Nova Scotia where output registered 6,747,477 tons in 1926 as against 3,842,978 tons in 1925. A four months' strike in Nova Scotia seriously hampered output in 1925.

The provinces of New Brunswick, Saskatchewan and British Columbia showed slight reductions in outputs as against 1925 but the Alberta production increased 11 per cent over the previous year. Alberta's production was 6,503,705 tons, this province yielding first place to Nova Scotia; British Columbia, holding third place in output for the year, accounted for 2,613,719 tons; Saskatchewan followed with an output of 439,803 tons; and New Brunswick's output totalled 173,111 tons.

Crude petroleum production in Canada during 1926 showed an encouraging increase over the total for the preceding year. The year's production amounted to 364,444 barrels valued at \$1,311,665; in 1925 the total was 332,001 barrels worth \$1,250,705. Alberta's production, mainly from the Royalite No. 4 wet gas well, topped the high mark of 1925 reaching a new record of 216,050 barrels. A decline was shown in the Ontario production for the year when 137,850 barrels were produced. Another feature of considerable worth was the proportionately large increase in the New Brunswick production, the 1926 figures being 10,544 barrels as against 5,376 barrels in the preceding year.

Natural gas was produced in Alberta, Ontario, New Brunswick and in very small quantities in Manitoba during 1926, production showing a substantial increase over the total for the preceding year. Production amounted to 19,208,209 thousand cubic feet valued at \$7,557,174; in 1925 the figures were 16,902,897 thousand cubic feet worth \$6,833,005. The province of Alberta continued to hold the premier position in petroleum output which it gained from Ontario in 1925.

Asbestos production in Canada during 1926 reached the grand total of 279,403 tons with a valuation of \$10,099,423; an average value of \$36.15 per ton. In 1925, the shipments (exclusive of sand and gravel) amounted to 273,524 tons at \$8,977,546, or an average value of \$32.82 per ton.

Continuing the advance in gypsum production in 1925, the shipments during 1926 created a new high mark for the industry in Canada. Increases in tonnage shipped were reported in all producing provinces except New Brunswick. Total production for the year amounted to 883,728 tons worth \$2,770,813, an increase of 19.3 per cent in quantity and 15.9 per cent in value over 1925.

Salt production continued to increase; the high record of 233,746 tons produced in 1925 was topped by the new high mark of 262,547 tons in 1926. The value of the 1926 production amounted to \$1,480,149 as compared with a value of \$1,410,697 for the 1925 output.

In the clay products and other structural materials group increases were general, reflecting the increase in building operations during the year. Clay products as a group showed an output value gain of 8.6 per cent over 1925. The quantity of cement produced was greater by 7.2 per cent but owing to the lowering of prices, the total value of the output was less than in the previous year by 7.3 per cent. Lime, sand and gravel and stone all showed substantial gains.

THE PROVINCES.—In 1926 on the basis of values, Ontario produced 35.23 per cent of the total mineral production of the Dominion, the value of the output being \$84,702,296. British Columbia ranked second with an output worth \$65,622,976 or 27.29 per cent of the total. Nova Scotia followed at \$28,873,792 or 12 per cent. Alberta ranked fourth with a production valued at \$26,977,027 or 11.21 per cent, to be followed by Quebec with a credit of \$25,956,193 or 10.80 per cent; Manitoba, the Yukon, New Brunswick and Saskatchewan followed in the order named.

Nova Scotia stood third on the list in 1926. The chief mineral product is coal and in 1926 the value of the output increased \$11,000,000 over the previous year when a four months' strike held up production. The province produces gypsum, clay products, gold, building stone, salt and several minor mineral products.

In New Brunswick non-metallic mines are of chief interest. Small deposits of manganese and antimony are known to occur but these have not been worked to any great extent in recent years. Of the non-metallies, coal is the most important but other minerals obtained are grindstones, gypsum, petroleum, natural gas, clay products, lime, stone, sand and gravel, and recently there has been some movement towards the development of oil shales.

While the main source of revenue from the mineral production of Quebec in 1926 was found in the non-metallics, the province also produced lead, zinc, silver, gold and copper. Asbestos is the chief non-metallic mineral produced and the output of this commodity from the mines in the western townships represents about 80 per cent of the world's production. Feldspar and mica are produced each year in considerable amounts. Other non-metallic minerals found in Quebec are graphite, magnesite, iron oxides, mineral waters, iron ore sold for export, molybdenite, phosphate, pyrites, quartz and soapstone and there is a very considerable production of cement, brick, and other clay products, lime, building stone, sand and gravel. Extensive prospecting in the Rouyn field has resulted in the proving-up of many claims and the establishment of a very considerable metal mining industry in this area yielding copper, zinc, gold and silver.

Ontario, with an area of 407,262 square miles, occupies first place among the mineral-producing provinces of the Dominion, and is particularly notable for its production of gold and silver. It is in this province only that cobalt and nickel are produced. Here, too are produced one-third of Canada's copper, some arsenic, platinum, lead, natural gas, salt, gypsum, quartz, crude petroleum, feldspar, talc, mica, and pyrites and small quantities of antimony, bismuth, palladium, actinolite, asbestos, grinding pebbles and mineral waters. In the class of building materials there is also a large production of portland cement, bricks and other clay products, building stone, sand and gravel, and quick and hydrated lime.

Individual mines in Ontario are said to own the largest deposits in America of talc, feldspar, mica and graphite. Porcupine and Kirkland lake are two of the most productive gold camps in the world and the rich silver ores of Cobalt, South Lorrain and Gowganda put these areas among the world's richest silver camps.

Manitoba and Saskatchewan are primarily agricultural provinces, and the annual production of minerals in each of these is valued usually between one and three million dollars. In 1926, Manitoba's mineral production was in the neighbourhood of three million dollars. This province has a total area of 251,882 square miles. Of this, approximately two-fifths in the southern and southwestern sections, is agricultural and is also the main source of the non-metallic minerals produced in the province. The remaining three-fifths of the area is Precambrian and at different points is being prospected for gold, copper and other metallic minerals. Transportation to and from the northern metal mining fields as yet is costly and for this reason the development of properties in these areas has been retarded. The principal items of interest in the minerals of Saskatchewan are lignite coal, sodium sulphate, clay products, sand and gravel. There is also in this province a supply of high-grade pottery clay. Shipments have been made from time to time to Alberta, and hope is held out that this deposit may yet prove the basis of a ceramic industry within the province.

Alberta is also a coal-producing province second only to Nova Scotia and indeed this province stood first in 1925 but in 1926 production from Alberta was some 200,000 tons less than the output of Nova Scotia. Natural gas is also an important factor in the industrial life of certain sections of the province and in the production of petroleum Alberta exceeded Ontario by 56 per cent and reported a greater production than in 1925 by 18 per cent. Other mineral products from this province are salt, cement, clay products, lime, sand and gravel, stone and bituminous sands.

British Columbia has long been associated with mining, first as an alluvial gold producer and later as a producer of metals from lode mines. This province yields more than two-thirds of Canada's copper, about fifty per cent of the silver production, and the greater part of the lead and zinc produced in the Dominion. Gold production from this province amounts to about 12.88 per cent of the Dominion total. In this province, on Vancouver island, along the Crowsnest Pass, and in different parts of the interior, there are large coal areas. Other minerals produced in less amounts include: cement, sand and gravel, lime, building stone, clay products, quartz, pyrites, arsenic, platinum, grindstones, iron oxides and gypsum, and in recent years sodium carbonate. Production in 1926 surpassed all previous records, and in all phases of mining—prospecting, development, and production—great progress has been and still is being made in the Pacific coast province. The Sullivan mine of the Consolidated Mining and Smelting Company has now become recognized as one of the greatest lead and zinc mines in the world and the silver produced in association

with these metals makes this mine the largest individual silver producer in Canada. It is also highly satisfactory that the metals, silver, lead and zinc contained in the crude ore of this mine, are now to a large extent, being smelted, refined and prepared in finished condition for the market by this company's metallurgical works at Trail.

The Yukon, with its production value of over 2 million dollars, showed improvement over the preceding year. It is difficult, however, to compare the production of the Yukon territory from year to year owing to the practice there of making seasonal shipments to outside smelters. The principal minerals produced are silver, lead, and alluvial gold, the latter becoming relatively less important in recent years. The Treadwell Yukon Company, a large silver-lead producer, has established a concentrator, which is of great assistance to nearby operators of smaller mines who are now able to ship to the Treadwell Yukon Company and get quick returns thus allowing them to do further development work on their properties. The Treadwell Company cannot ship in the winter and must therefore store the high-grade ore and concentrates until the opening of navigation in the spring. Thus, statements of smelter receipts and of annual shipments from the Yukon often do not agree although production may have been fairly steady in the period under review.

GENERAL STATISTICS.—A large number of Canadian mines operated continuously throughout the year although alluvial operators must shut down during the winter. Sand and gravel companies and some quarries curtail operations because of the slack time in road building and other construction operations but on the whole where the demand for primary products is sufficiently urgent and profitable, companies maintain a steady output regardless of climatic conditions.

The capital employed in Canadian mines in 1926 amounted to \$688,750,008 of which \$320,248,840 was invested in metal mining and metallurgical works; \$223,148,718 in coal mines and oil and gas wells; \$50,960,411 in other non-metals such as asbestos, feldspar, graphite, etc.; \$28,152,062, in the clay products industry; and \$66,239,977 in properties producing cement, lime, sand and gravel and stone.

Investments in coal mining accounted for 22 per cent of the total capital employed in the mining industry. Gold quartz mining represented another 15 per cent of the capital; metallurgical works, 12 per cent; natural gas, 8 per cent; nickel-copper, silver-cobalt and the cement industry about 6 per cent each; clay products, 4 per cent; and stone, 2 per cent. The other mining industries accounted for the balance of the capital employed. Ontario mines accounted for 41 per cent of the total investment in the industry. For the other provinces the relative capital investments in mining expressed in percentages of the total for Canada, were as follows: Quebec, 16 per cent; British Columbia, 16 per cent; Alberta, 15 per cent; Nova Scotia, 8 per cent; Manitoba, 2 per cent; the remaining 2 per cent represented the investment in the provinces of New Brunswick and Saskatchewan and the Yukon Territory.

Salaries and wages paid to 77,931 employees amounted to \$94,216,813, of which \$36,033,798 was distributed among 23,742 individuals in the metal mines and metallurgical works; 36,166 people employed by coal and other non-metal mines received \$44,379,854; and clay products and other structural materials industries had 18,023 employees who received \$13,803,161. In the metal mining and metallurgical group there was a marked and steady increase in the number employed during the past five years and in the fuels and other non-metallics, although the number employed was greater in 1926 than in 1925, yet it did not reach the total of 1923 when Canada's coal output was the greatest for all time.

In clay products manufacture and in the output of cement, sand and gravel, and stone there were more employees than in 1925. More complete returns of sand and gravel production were obtained through co-operation with the *Bureau of Mines* of the province of Quebec, who in turn co-operated with the *Provincial Roads Department*. The *Roads Department* report accounted for the major part of the production from Quebec and this in turn was reflected in the increase shown in the number of employees and in the total of salaries and wages paid during the year in that industry.

The total cost of fuel and electricity used in the mining industry in Canada was \$23,518,304, an increase of 3 million dollars over the preceding year and more than double the cost reported in 1922. Metal mines and metallurgical works used over 42 per cent; fuels and other non-metallics consumed about 28 per cent and structural materials and clay products accounted for the balance.

The net value of the products of the mines, smelters, quarries, sand pits, oil and gas wells, clay products and cement industries, in Canada during 1926 amounted to \$241,138,661 as against \$215,201,873 in 1925, and \$182,858,578 in 1922. This shows the remarkable growth in the industry during the past five years but these figures must not be confused with the figures given as the value of mineral production. In calculating the mineral production, the metals recovered from Canadian mines are valued at average annual prices for these metals in recognized world markets, but the figures given in the last column of the principal statistics table represent the actual net return to the mine or metallurgical works regardless of the metal content of the shipments or the distance that the ore or other product must be shipped. As a specific example an ore from the Mayo district of the Yukon may contain high values in silver and lead but the return to the operator may not be very large because of the long distance the ore must be shipped. In the mineral production table, the recoverable silver and lead would be valued at the average market price for the year but in the principal statistics table only the return less freight and treatment charges are included. It is gratifying to note that this amount increases year after year showing that the products of Canadian mines are finding a ready and growing world-wide market.

IMPORTS AND EXPORTS.—Imports into Canada during the fiscal year ending March, 1927, of minerals and allied products reached a value of \$470,806,749 as against \$396,328,001 in the preceding year. These consisted of iron and its products valued at \$229,429,485, non-ferrous metals worth \$52,747,842, non-metallic minerals valued at \$156,784,707, and chemicals and allied products worth \$31,844,715. In the previous year, imports of iron and its products amounted to \$181,196,800; non-ferrous metals, \$47,692,985; non-metallic minerals, \$139,033,940; and chemicals and allied products, \$28,404,276. Exports of similar products during the same period amounted to \$200,008,612, which was 7 per cent lower than the preceding year when the exports totalled \$214,278,320. The 1926-27 exports of iron and its products were valued at \$74,284,824 as against \$74,735,077 in the previous year; non-ferrous metals, \$80,639,197 as against \$97,476,270; non-metallic minerals \$28,509,838 as against \$24,568,845; and chemicals and allied products, \$16,574,753, as compared with \$17,498,128 during the year ending March 31, 1926.

An analysis of the trend of Canada's external trade in these four groups during the fiscal year 1926-27 shows that the value of imports from the United States made up 85 per cent of the total brought in from all foreign sources; 7.4 per cent of the value of purchases represented goods from the United Kingdom; and the balance was derived from other countries, chief among which were, Germany, Belgium, Sweden, France, the Netherlands, Switzerland, and Argentina. Of the total exports of these commodities 37.5 per cent went to the United States and 33 per cent to the British Empire, of which Australia, British India, and New Zealand were the largest purchasers. Among the remaining countries of the world the largest importers were Japan, Argentina, China, France, the Netherlands, Germany, Dutch East Indies and Brazil.

Chief among the exports of iron and its products during the fiscal year 1926-27 were automobiles and automobile parts valued at \$36,500,000 and farm implements at \$17,000,000; among the non-ferrous metals, gold and silver in the form of bullion and in ore was valued at \$20,000,000; copper in blister form, in ore, scrap, wire, and in other forms worth \$15,000,000; pig lead and lead in ore, \$13,000,000; nickel in its various forms, \$13,000,000; and zinc spelter, ore, scrap and dross, \$9,000,000. Among the exports of non-metallic minerals, asbestos headed the list at \$10,500,000, followed by coal worth \$7,200,000; among the remaining items artificial abrasives at nearly \$3,000,000, crude petroleum and gypsum each at over \$1,000,000 were the largest. In the chemicals and allied products group, cyanamide at \$3,800,000; soda and soda compounds worth \$3,600,000; acids at \$2,600,000; and calcium carbide at \$1,500,000 lead the list.

Table 4—Exchange Table Showing the Amount Paid in Canadian Dollars for one United States Dollar by Months, 1923-1926

Month	1923	1924	1925	1926
	\$	\$	\$	\$
January.....	1-0067	1-0275	1-0026	1-0020
February.....	1-0119	1-0322	1-0014	1-0034
March.....	1-0208	1-0294	1-0013	1-0037
April.....	1-0203	1-0184	1-0005	0-9996
May.....	1-0222	1-0166	1-0000	0-9992
June.....	1-0231	1-0141	1-0000	0-9989
July.....	1-0263	1-0064	0-9995	0-9987
August.....	1-0244	1-0011	0-9995	0-9985
September.....	1-0233	1-0078	1-0001	0-9986
October.....	1-0156	1-0016	0-9992	0-9993
November.....	1-0181	1-0000	0-9992	0-9986
December.....	1-0239	1-0015	1-0003	1-0006
Average for the year.....	1-0197	1-0131	1-0003	1-0001

Table 5—Metal Prices 1922-1926

Commodity	Market	Unit	1922	1923	1924	1925	1926
			\$	\$	\$	\$	\$
Antimony (ordinaries).....	New York.....	Pound....	0-05471	0-07897	0-10836	0-17494	0-15988
Arsenic, white.....	New York.....	Pound....	0-08500	0-12050	0-09636	0-0466	0-0350
Cobalt.....	New York.....	Pound....	3-25	2-85	2-75	2-50	2-50
Cobalt oxide.....	New York.....	Pound....	2-00	2-10	2-10	2-20	2-10
Copper.....	New York*.....	Pound....	0-13282	0-14421	0-13024	0-14042	0-13795
Lead.....	New York.....	Pound....	0-05734	0-07267	0-08097	0-09020	0-08417
Lead.....	Montreal*.....	Pound....	0-06219	0-07179	0-08104	0-0912	0-08154
Lead.....	London*.....	Pound....					0-06751
Nickel†.....	New York*.....	Pound....	0-35	0-29353	0-28	0-34	0-36
Platinum.....	New York*.....	Ounce.....	97-618	116-537	118-817	119-093	113-269
Silver.....	New York*.....	Ounce.....	0-67528	0-64873	0-66781	0-69065	0-62107
Tin.....	New York.....	Pound....	0-31831	0-41799	0-49674	0-56790	0-63615
Zinc.....	St. Louis*.....	Pound....	0-05716	0-06607	0-06344	0-07622	0-07337
Zinc.....	London*.....	Pound....					0-0741

\*Quotations used in this report in computing value of mineral production.

† Nickel shot in 1926.

London price used for lead and zinc in 1926.

Table 6—Prices of Non-Metallic Minerals and Structural Materials, 1922-1926, Showing the Average Returns Received by Producers, f.o.b. Shipping Points in Canada as Computed from the Total Receipts and Total Shipments for the Year

Commodity	Unit	1922	1923	1924	1925	1926
		\$	\$	\$	\$	\$
<b>NON-METALLICS</b>						
Actinolite.....	Ton.....	11.50	11.00	13.60	12.50	12.50
Asbestos.....	Ton.....	33.92	32.50	29.73	30.95	36.14
Barytes.....	Ton.....	33.00	20.89	21.90	23.77	23.07
Bituminous sands.....	Ton.....				4.00	4.00
Chromite.....	Ton.....	15.00		Transferred	to Metallics.	
Coal.....	Ton.....	4.32	4.24	3.93	3.75	3.63
Diatomite.....	Ton.....	26.39	25.00	25.40		
Feldspar.....	Ton.....	8.96	8.13	8.00	8.22	8.63
Fluorspar.....	Ton.....	22.68	12.46	17.66	4.94	
Graphite.....	Ton.....	52.52	60.98	57.05	61.79	71.45
Grinding pebbles.....	Ton.....				9.00	9.00
Grindstones.....	Ton.....	43.52	39.76	48.60	48.46	56.11
Gypsum (crushed).....	Ton.....	2.26	1.90	1.82	1.83	3.13
Iron Oxides.....	Ton.....	15.18	12.43	12.54	12.91	15.37
Magnesite.....	Ton.....	26.78	27.99	26.17	21.93	30.07
Magnesium sulphate.....	Ton.....	23.52	54.38			
Manganese.....	Ton.....	28.00		Transferred	to Metallics.	
Mica (rough cobbled).....	Pound.....	0.12	0.10	0.06	0.05	0.04
Mineral water.....	Gal.....	0.06	0.07	0.07	0.14	0.14
Natro-alunite.....	Ton.....	50.00	50.00		50.00	
Natural gas.....	M cu. ft.....	0.40	0.36	0.38	0.40	0.39
Peat.....	Ton.....	4.83			6.12	
Petroleum, crude.....	Brl.....	3.41	3.06	2.91	3.76	3.59
Phosphate.....	Ton.....	9.45	20.00		11.81	20.00
Pyrites.....	Ton.....	4.10	3.95	4.06	3.77	3.58
Quartz.....	Ton.....	1.90	2.26	2.14	1.84	2.38
Salt.....	Ton.....	8.96	8.46	6.61	6.04	5.63
Sodium carbonate.....	Ton.....				7.26	9.02
Sodium sulphate.....	Ton.....	23.76	13.90	5.54	5.06	2.00
Talc.....	Ton.....	14.28	14.51	13.63	14.22	13.77
Volcanic dust.....	Ton.....				8.62	7.00
<b>STRUCTURAL MATERIALS AND CLAY PRODUCTS</b>						
Cement, portland and puzzolan.....	Brl.....	2.22	2.00	1.78	1.73	1.49
<b>Clay products—</b>						
Brick, common.....	M.....	15.99	15.50			
Brick, pressed.....	M.....	20.31	19.91			
Brick, hollow building.....	M.....	91.72	80.35			
Brick, moulded and ornamental.....	M.....	20.68	20.95			
Brick, face.....	Soft mud process.....	M.....		17.10	18.83	19.71
Brick, common.....		M.....		14.89	11.20	14.65
Brick, face.....	Stiff mud process, wire cut.....	M.....		22.86	20.06	21.24
Brick, common.....		M.....		15.09	14.08	17.26
Brick, face.....	Dry press.....	M.....		21.60	21.50	21.40
Brick, common.....		M.....		13.13	12.24	13.40
Brick, fancy or ornamental.....	M.....			130.41	50.20	52.07
Brick, sewer.....	M.....			15.15	21.07	17.90
Firebrick.....	M.....	37.55	48.19	48.36	49.27	45.83
Fireclay.....	Ton.....	5.41	9.00	7.20	10.50	9.25
Hollow blocks.....	Ton.....				9.46	9.25
Floor tile.....	Sq. ft.....				0.20	0.22
Kaolin.....	Ton.....	14.92	14.53			
Paving brick.....	M.....	39.81				41.10
Roofing tile.....	No.....				0.08	0.09
Sewer pipe.....	Ton.....	23.26	23.01	20.87	19.51	19.48
Tile, drain.....	M.....	27.65	30.50	27.04	27.59	27.77
Lime.....	Bush.....	0.35	0.33	0.34	0.33	0.32
Sand and gravel.....	Ton.....	0.30	0.24	0.28	0.29	0.28
<b>Stone—</b>						
Granite.....	Ton.....	3.24	2.91	2.41	2.07	1.48
Limestone.....	Ton.....	1.32	1.21	1.14	1.08	1.07
Marble.....	Ton.....	121.28	81.49	73.63	83.69	98.50
Sandstone.....	Ton.....	3.20	2.92	2.54	1.66	2.54

Table 7—Annual Values of the Mineral Production of Canada, 1886-1926

Year	Value of production	Value per capita	Year.	Value of production	Value per capita
	\$	\$		\$	\$
1886.....	10,221,255	2.23	1906.....	79,286,697	12.81
1887.....	10,321,331	2.23	1907.....	86,865,202	13.75
1888.....	12,518,894	2.67	1908.....	85,557,101	13.16
1889.....	14,013,113	2.96	1909.....	91,821,441	13.70
1890.....	16,763,353	3.50	1910.....	106,823,623	14.93
1891.....	18,976,616	3.92	1911.....	103,220,994	14.32
1892.....	16,623,415	3.30	1912.....	135,048,296	18.33
1893.....	20,035,082	4.04	1913.....	145,634,812	19.35
1894.....	19,931,158	3.98	1914.....	128,863,075	16.75
1895.....	20,505,917	4.05	1915.....	137,109,171	17.44
1896.....	22,474,266	4.38	1916.....	177,201,534	22.05
1897.....	28,485,073	5.49	1917.....	189,646,821	23.18
1898.....	38,412,431	7.32	1918.....	211,301,897	25.37
1899.....	49,234,005	9.27	1919.....	176,686,390	20.84
1900.....	64,420,877	12.04	1920.....	227,859,665	26.40
1901.....	65,797,911	12.16	1921.....	171,923,342	19.56
1902.....	63,221,836	11.36	1922.....	184,297,242	20.55
1903.....	61,740,513	10.82	1923.....	214,079,331	23.41
1904.....	60,082,771	10.27	1924.....	209,583,406	22.71
1905.....	69,078,999	11.49	1925.....	226,583,333	24.19
			1926.....	240,437,123	25.61

Table 8—Annual Values of the Mineral Production of Canada by Classes, 1907-1926

Year	Metallics	Non-metallics including fuels	Clay products and other structural materials	Total
	\$	\$	\$	\$
1907.....	42,426,607	31,275,546	12,863,049	(a)86,865,202
1908.....	41,774,362	32,142,784	11,339,955	(a)85,557,101
1909.....	44,156,841	31,141,251	16,533,349	91,831,441
1910.....	49,438,873	37,757,158	19,627,592	106,823,623
1911.....	46,105,423	34,405,960	22,709,611	103,220,994
1912.....	61,172,753	45,080,674	28,794,869	135,048,296
1913.....	66,361,351	48,463,709	30,809,752	145,634,812
1914.....	59,386,619	43,467,229	26,009,227	128,863,075
1915.....	75,814,841	43,373,571	17,920,759	137,109,171
1916.....	106,319,365	53,414,983	17,467,186	177,201,534
1917.....	106,455,147	63,354,363	19,837,311	189,646,821
1918.....	114,549,152	77,621,946	19,130,799	211,301,897
1919.....	73,262,793	76,002,087	27,421,510	176,686,390
1920.....	77,939,630	108,027,947	41,892,088	227,859,665
1921.....	49,343,232	87,842,682	34,737,428	171,923,342
1922.....	61,785,707	82,976,794	39,534,741	184,297,242
1923.....	84,391,218	91,936,732	37,751,381	214,079,331
1924.....	102,406,528	71,796,009	35,380,869	209,583,406
1925.....	117,082,298	71,851,801	37,649,234	226,583,333
1926.....	115,237,581	85,240,144	39,959,398	240,437,123

(a) Total includes \$300,000 allowed for products not reported.

Table 9.—Values of the Mineral Production of Canada by Provinces, 1899-1926

Year	Nova Scotia*	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon
	\$	\$	\$	\$	\$	\$	\$	\$	\$
1899	6,817,274	420,227	2,585,635	9,819,557		17,108,707		12,482,605	Included
1900	9,298,479	439,060	3,292,383	11,258,099		23,452,330		10,680,526	with
1901	7,770,159	467,985	3,759,984	13,970,010		19,297,940		20,531,833	Mani-
1902	10,686,549	607,129	3,743,636	14,619,091		16,127,400		17,448,031	toba,
1903	11,431,914	580,495	3,585,938	14,160,033		14,082,988		17,899,147	Saskat-
1904	11,212,746	559,913	3,688,482	12,582,843		12,713,613		19,325,174	chewan
1905	11,507,047	559,035	4,405,975	18,833,292		11,387,642		22,386,008	and
1906	12,894,303	646,328	5,242,058	25,111,682		10,092,726		25,299,600	Alberta
1907	14,532,040	664,467	6,205,553	30,381,638	898,775	533,251	4,657,524	25,656,056	3,335,898
1908	14,487,108	579,816	6,372,949	30,623,812	584,374	413,212	5,122,505	23,704,035	3,669,290
1909	12,504,810	657,035	7,086,265	37,374,577	1,193,377	456,246	6,047,447	22,479,006	4,052,678
1910	14,195,730	581,942	8,270,136	45,538,078	1,500,359	498,122	8,996,210	24,478,572	4,704,474
1911	15,409,397	612,830	9,304,717	42,796,162	1,791,772	636,706	6,662,673	21,299,305	4,707,432
1912	18,922,236	771,094	11,656,998	51,985,876	2,463,074	1,165,642	12,073,589	30,076,635	5,833,242
1913	19,376,183	1,102,613	13,475,534	59,167,749	2,214,496	881,142	15,054,046	28,086,812	6,276,737
1914	17,584,639	1,014,570	11,856,929	53,034,677	2,413,489	712,313	12,684,234	24,164,039	5,188,185
1915	18,088,342	903,467	11,619,275	61,071,287	1,318,387	451,933	9,909,347	28,689,425	5,057,708
1916	20,042,262	1,118,187	14,406,598	80,461,323	1,823,576	590,473	13,297,543	39,969,962	5,491,610
1917	21,104,542	1,435,024	17,406,077	89,066,609	2,628,264	860,651	16,527,555	36,141,926	4,482,202
1918	22,317,108	2,144,017	19,605,347	94,694,093	3,120,600	1,019,781	23,109,987	42,935,333	2,355,631
1919	23,445,215	1,770,945	21,267,947	87,917,998	2,868,378	1,531,964	21,067,582	34,865,427	1,940,934
1920	24,130,017	2,491,787	28,886,214	81,715,808	4,223,461	1,837,468	33,580,456	39,411,728	1,576,726
1921	28,012,111	1,901,505	15,157,094	87,356,651	1,934,117	1,114,220	30,562,229	33,230,460	1,754,955
1922	28,923,499	2,263,692	17,647,939	85,866,029	2,258,942	1,255,470	27,872,136	39,423,962	1,785,573
1923	29,648,893	2,462,457	20,308,763	80,825,851	1,768,037	1,047,583	31,287,536	43,757,388	2,972,823
1924	23,820,352	1,969,260	19,136,504	86,398,656	1,534,249	1,128,100	22,344,940	52,298,533	952,812
1925	17,625,612	1,743,858	24,284,527	87,980,436	2,276,759	1,076,392	25,318,866	64,485,242	1,791,641
1926	28,873,792	1,811,104	25,956,193	84,702,296	3,073,528	1,193,394	26,977,027	65,622,976	2,226,813

\*Includes a small production from Prince Edward Island.

Table 10.—Percentage of the Total Value of the Mineral Production of Canada Produced by Each Province, 1922-1926

Province	1922	1923	1924	1925	1926
Nova Scotia*	14.12	13.85	11.38	7.78	12.01
New Brunswick	1.23	1.15	0.94	0.77	0.75
Quebec	9.57	9.49	9.12	10.72	10.79
Ontario	35.74	37.76	41.29	38.82	35.23
Manitoba	1.23	0.83	0.73	1.01	1.28
Saskatchewan	0.67	0.49	0.54	0.48	0.50
Alberta	15.13	14.60	10.61	11.17	11.22
British Columbia	21.39	20.44	24.94	28.46	27.29
Yukon	0.92	1.39	0.45	0.79	0.93
Canada	100.00	100.00	100.00	100.00	100.00

\*Includes a small percentage from Prince Edward Island.

Table 11.—Values of the Mineral Production of Canada, by Provinces, and by Classes, 1926

Province	Metallics	Non-metallics including fuels	Clay products and other structural materials	Total
	\$	\$	\$	\$
Nova Scotia	34,757	28,212,847	626,188	28,873,792
New Brunswick		1,427,871	383,233	1,811,164
Quebec	1,897,530	10,835,961	13,222,702	25,956,193
Ontario	59,332,250	7,719,308	17,650,738	84,702,296
Manitoba	3,897	461,521	2,608,110	3,073,528
Saskatchewan		833,985	359,409	1,193,394
Alberta		24,832,636	2,144,391	26,977,027
British Columbia	51,743,134	10,915,215	2,964,627	65,622,976
Yukon Territory	2,226,013	800		2,226,813
Canada	115,237,581	85,240,144	39,959,398	240,437,123

Table 12—Principal Statistics of the Mineral Industry in Canada by Industries, 1922-1926

(Metal Mining Industries)

Year	Number of active operators	Number of operating plants or mines	Capital employed \$	Number of employees	Salaries and wages \$	Cost of fuel and electricity \$	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
ALLUVIAL GOLD							
1922.....	200	200	10,703,650	650	670,500		1,460,347
1923.....	138	1,467	10,703,650	307	467,807		1,646,705
1924.....	89	1,404	21,871,256	264	389,079		1,038,013
1925.....	99	1,419	22,095,669	363	347,448		1,270,419
1926.....	108	1,179	4,702,808	285	339,841	44,482	879,886
AURIFEROUS QUARTZ							
1922.....	79	79	35,368,094	5,441	8,011,682	353,453	26,120,210
1923.....	65	65	77,574,976	5,524	8,961,434	1,497,197	25,021,837
1924.....	70	70	83,982,765	6,738	10,500,140	1,559,406	31,298,107
1925.....	52	52	84,964,062	7,052	11,931,948	1,836,050	35,035,361
1926.....	60	60	103,945,022	7,663	12,340,623	2,083,811	35,171,561
COPPER-GOLD-SILVER							
1922.....	18	18	6,519,516	826	1,150,275	77,231	2,031,671
1923.....	14	14	19,108,072	1,790	3,004,292	334,696	4,361,486
1924.....	15	15	19,099,845	2,118	3,292,228	306,153	5,226,859
1925.....	40	41	23,200,580	2,374	3,555,844	413,767	7,758,990
1926.....	76	84	27,936,685	3,403	4,546,493	541,914	9,973,049
SILVER-COBALT							
1922.....	26	30	29,459,603	1,403	1,532,736	98,242	8,374,411
1923.....	18	24	31,334,050	1,408	1,949,738	410,089	6,521,853
1924.....	26	34	41,013,466	1,769	2,534,304	468,651	6,594,032
1925.....	33	38	44,045,619	1,788	2,576,414	498,874	6,611,644
1926.....	33	37	40,504,721	1,779	2,815,930	518,907	5,470,433
SILVER-LEAD-ZINC							
1922.....	75	91	6,828,980	994	1,371,645	83,530	4,173,812
1923.....	87	93	9,203,997	1,352	2,024,752	257,574	6,620,067
1924.....	82	94	12,328,511	1,936	2,943,635	474,343	16,600,970
1925.....	89	94	15,735,930	2,538	3,867,613	584,121	21,902,686
1926.....	108	127	22,699,417	2,924	4,431,730	658,679	26,190,034
NICKEL-COPPER							
1922.....	2	5	8,455,183	440	582,042	5,828	1,557,414
1923.....	3	4	23,168,812	1,081	1,421,086	181,729	3,562,065
1924.....	3	7	37,189,778	1,421	1,880,823	150,460	4,235,934
1925.....	2	6	38,691,594	1,412	1,867,217	105,570	3,794,244
1926.....	2	6	38,593,359	1,437	1,963,617	95,621	4,627,175
(b) MISCELLANEOUS							
1922.....			5,479,766				163,973
1923.....	6	6	5,504,796	42	34,687	2,257	463,960
1924.....	4	4	5,000	42	16,436	4,010	71,422
1925.....	3	3	109,583	33	17,301	2,007	23,110
1926.....	2	2	87,588	25	10,626	3,844	11,072
NON-FERROUS METAL SMELTING AND REFINING							
1922.....	8	13	63,160,551	3,384	5,042,787	1,031,572	16,465,205
1923.....	8	10	64,290,931	4,968	7,930,236	5,221,278	20,414,963
1924.....	7	9	66,337,664	5,521	8,136,251	4,765,483	21,760,273
1925.....	5	6	61,691,928	5,104	8,568,997	5,280,674	29,304,384
1926.....	7	9	81,779,240	6,226	9,584,938	6,076,627	33,615,909

Table 12—Principal Statistics of the Mineral Industry in Canada by Industries, 1922-1926—Continued

## Metal Mining Industries—Concluded

## Total Metal Mining Industries

Year	Number of active operators	Number of operating plants or mines	Capital employed \$	Number of employees	Salaries and wages \$	Cost of fuel and electricity \$	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
1922.....	408	436	165,975,343	13,138	18,361,667	1,649,856	60,347,043
1923.....	339	1,683	240,889,284	16,472	25,794,032	7,904,820	68,612,936
1924.....	296	1,637	281,828,285	19,809	29,692,896	7,788,506	86,825,610
1925.....	323	1,659	290,534,965	20,664	32,732,782	8,721,063	105,700,838
1926.....	396	1,504	320,248,840	23,742	36,033,798	10,023,885	115,939,119

## (Non-Metal Mining Industries including Fuels)

## (c) FUELS

## COAL

1922.....	349	402	140,466,108	31,838	39,550,627	3,183,642	65,518,497
1923.....	459	507	143,447,448	32,046	46,215,712	4,756,308	72,058,986
1924.....	451	520	146,711,531	27,183	35,123,490	4,358,987	53,593,988
1925.....	450	511	145,006,440	25,032	33,200,309	4,069,634	49,261,951
1926.....	433	457	148,278,315	28,368	35,841,796	4,631,691	59,875,094

## NATURAL GAS

1922.....	132	1,981	31,373,817	921	939,194	.....	5,846,501
1923.....	192	2,060	38,722,854	867	1,050,366	2,587	5,884,618
1924.....	186	2,031	50,561,757	1,240	1,315,405	3,059	5,708,636
1925.....	161	2,236	48,895,802	1,059	1,206,875	13,396	6,835,005
1926.....	169	2,255	57,231,261	1,254	1,448,778	40,444	7,557,174

## PETROLEUM

1922.....	120	2,880	2,764,099	160	167,176	.....	611,176
1923.....	117	2,694	2,934,213	151	118,231	17,130	522,018
1924.....	119	2,473	5,650,086	158	152,957	18,656	467,400
1925.....	180	2,885	7,954,722	259	318,101	20,990	1,250,705
1926.....	210	2,822	17,639,142	634	788,843	77,902	1,311,665

## TOTAL FUELS

1922.....	601	5,263	174,604,024	32,919	40,656,997	3,183,642	71,976,174
1923.....	768	5,261	185,104,515	33,064	47,384,309	4,776,025	78,465,622
1924.....	756	5,024	202,923,374	28,581	36,591,852	4,380,702	59,770,024
1925.....	791	5,632	201,856,964	26,350	34,725,285	4,104,020	57,345,661
1926.....	812	5,534	223,148,718	30,256	38,079,417	4,760,037	68,743,933

## OTHER NON-METAL MINING INDUSTRIES

## ABRASIVES

1922.....	3	3	259,666	40	31,199	3,351	43,742
1923.....	5	5	160,094	62	50,200	4,892	80,083
1924.....	5	5	156,095	76	64,312	5,260	130,824
1925.....	8	8	154,733	62	55,466	5,408	126,490
1926.....	8	8	358,342	102	90,069	9,716	152,433

## ASBESTOS

1922.....	12	15	43,997,252	2,572	2,581,644	265,962	5,552,723
1923.....	14	16	42,715,557	3,165	3,607,178	920,826	7,522,506
1924.....	15	15	43,216,966	2,597	2,977,304	760,046	6,710,830
1925.....	14	19	38,133,046	2,582	2,997,107	923,239	8,988,360
1926.....	8	16	34,905,096	2,797	3,544,097	1,012,232	10,099,423

Table 12—Principal Statistics of the Mineral Industry in Canada by Industries,  
1922-1926—Continued

## OTHER NON-METAL MINING INDUSTRIES—Continued

Year	Number of active operators	Number of operating plants or mines	Capital employed  \$	Number of employees	Salaries and wages  \$	Cost of fuel and electricity  \$	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
FELDSPAR							
1922.....	25	25	388,310	225	127,182	5,231	248,402
1923.....	25	25	948,973	298	193,001	13,965	237,601
1924.....	25	25	953,525	290	223,937	16,866	358,540
1925.....	23	25	712,329	240	165,766	11,141	235,789
1926.....	29	30	582,350	410	213,571	14,654	310,238
GRAPHITE							
1922.....	3	3	512,910	38	28,042	3,387	31,353
1923.....	3	3	552,947	62	27,826	7,614	67,873
1924.....	4	4	647,947	75	55,449	12,163	76,117
1925.....	6	6	902,310	106	75,021	14,718	158,763
1926.....	3	3	1,132,273	68	63,064	10,804	194,860
GYPSUM							
1922.....	13	14	4,092,090	1,055	909,072	127,246	2,160,898
1923.....	15	16	4,249,628	1,225	1,017,556	190,906	2,243,100
1924.....	14	15	4,423,697	1,219	1,114,468	181,003	2,208,108
1925.....	15	16	4,506,995	1,039	1,018,585	189,649	2,389,891
1926.....	18	19	6,696,077	1,368	1,255,427	241,414	2,770,813
IRON OXIDES							
1922.....	4	4	217,428	49	44,839	16,318	110,608
1923.....	6	6	209,340	60	49,056	17,677	129,636
1924.....	5	5	193,633	38	33,221	16,815	91,160
1925.....	5	5	173,940	47	35,454	16,073	91,913
1926.....	5	5	178,078	45	38,348	17,576	101,843
MICA							
1922.....	20	20	441,802	147	64,641	1,807	152,263
1923.....	33	33	223,650	219	112,469	4,772	326,974
1924.....	50	50	249,876	223	127,201	5,532	357,272
1925.....	36	36	190,144	269	123,079	4,528	261,463
1926.....	22	22	186,478	208	128,269	5,353	229,204
QUARTZ							
1922.....	9	9	707,180	151	74,412	27,961	208,598
1923.....	11	12	1,044,456	278	284,189	55,985	599,250
1924.....	11	11	991,863	171	172,397	34,281	323,156
1925.....	14	15	1,005,159	153	145,494	20,495	363,612
1926.....	17	18	1,056,705	243	208,839	44,311	553,161
SALT							
1922.....	10	11	2,205,184	371	432,261	369,000	1,628,323
1923.....	11	12	2,406,992	368	412,597	356,794	1,713,516
1924.....	11	12	2,479,563	364	431,618	342,118	1,374,780
1925.....	12	13	2,563,508	402	467,487	315,368	1,410,697
1926.....	11	12	2,782,728	384	482,651	324,612	1,480,149
TALC AND SOAPSTONE							
1922.....	7	7	594,019	81	88,509	2,808	188,458
1923.....	6	6	679,337	60	59,321	15,504	150,507
1924.....	6	6	695,786	61	59,220	13,351	154,480
1925.....	7	7	744,037	92	74,519	22,218	205,835
1926.....	6	6	681,434	92	74,634	25,023	217,195

Table 12—Principal Statistics of the Mineral Industry in Canada by Industries, 1922-1926—Continued

## OTHER NON-METAL MINING INDUSTRIES—Concluded

Year	Number of active operators	Number of operating plants or mines	Capital employed \$	Number of employees	Salaries and wages \$	Cost of fuel and electricity \$	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
MISCELLANEOUS							
1922.....	35	35	4,868,904	310	187,102	22,071	675,252
1923.....	28	29	4,809,738	199	230,562	57,392	400,064
1924.....	33	34	2,428,619	136	82,937	14,948	240,718
1925.....	28	28	2,080,481	218	149,655	58,437	273,327
1926.....	28	28	2,400,850	193	201,468	79,877	386,892
TOTAL OTHER NON-METAL MINING INDUSTRIES							
1922.....	141	146	58,284,745	5,039	4,568,903	845,142	11,000,620
1923.....	157	163	58,000,712	5,996	6,043,955	1,646,327	13,471,110
1924.....	179	182	56,437,570	5,250	5,342,064	1,407,383	12,025,985
1925.....	168	175	51,166,682	5,210	5,307,633	1,581,274	14,506,140
1926.....	155	167	50,960,411	5,910	6,300,437	1,785,572	16,496,211
Total Non-Metal Mining Industries Including Fuels							
1922.....	742	5,409	232,888,769	37,958	45,225,900	4,028,784	82,976,794
1923.....	925	5,424	243,105,227	39,060	53,428,264	6,422,352	91,936,732
1924.....	935	5,206	259,360,944	33,821	41,933,916	5,788,055	71,796,069
1925.....	959	5,810	253,923,646	31,560	40,632,918	5,685,294	71,851,801
1926.....	967	5,701	274,109,129	36,166	44,379,854	6,535,609	85,240,144
Clay Products and Other Structural Materials							
CLAY PRODUCTS							
BRICK AND TILE							
1922.....	211	216	23,821,180	3,904	3,782,341	1,644,463	8,911,539
1923.....	202	204	24,866,834	3,954	4,045,487	2,254,445	8,220,269
1924.....	187	192	24,423,104	3,332	3,071,379	1,508,573	7,046,355
1925.....	168	173	22,410,450	3,403	3,167,926	1,565,341	7,374,551
1926.....	178	184	23,034,976	3,644	3,468,052	1,761,516	8,146,514
CLAY SEWER PIPE							
1922.....	5	5	3,057,149	448	547,411	217,228	1,571,464
1923.....	5	5	3,022,522	459	561,515	307,681	1,421,002
1924.....	5	5	3,149,838	467	596,598	281,448	1,343,197
1925.....	5	5	2,810,782	382	461,527	240,038	1,182,454
1926.....	5	5	3,026,076	407	497,512	227,456	1,177,247
FIRE BRICK AND OTHER FIRE CLAY PRODUCTS							
1922.....	5	5	1,705,753	182	264,548	82,228	683,266
1923.....	6	6	1,786,353	192	286,377	90,286	605,968
1924.....	7	7	1,850,385	208	258,416	74,431	584,838
1925.....	6	6	2,114,738	220	274,919	88,552	702,707
1926.....	5	5	1,780,967	188	249,471	75,544	706,984
STONEWARE AND POTTERY							
1922.....	4	4	230,467	112	124,575	12,652	252,889
1923.....	4	4	314,862	119	117,221	14,607	230,924
1924.....	6	6	387,667	113	114,925	14,642	240,687
1925.....	4	4	424,894	131	129,703	15,660	269,979
1926.....	4	4	310,043	149	130,254	15,538	322,726
TOTAL CLAY PRODUCTS							
*1922.....	227	232	31,168,903	4,681	4,752,341	1,969,092	11,438,456
*1923.....	219	221	32,294,371	4,730	5,011,700	2,667,115	10,483,016
1924.....	205	210	29,810,994	4,120	4,041,318	1,879,094	9,215,077
1925.....	183	188	27,760,864	4,136	4,034,075	1,909,591	9,529,691
*1926.....	194	200	28,152,062	4,395	4,346,687	2,080,054	10,357,323

Table 12—Principal Statistics of the Mineral Industry in Canada by Industries, 1922-1926—Concluded

## OTHER STRUCTURAL MATERIALS

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries
			\$		\$	\$	\$
CEMENT							
1922.....	6	11	41,573,737	1,753	2,315,240	2,457,456	15,438,481
1923.....	6	10	38,284,494	1,842	2,551,784	2,809,414	15,064,661
1924.....	6	10	36,766,574	1,837	2,531,622	2,872,711	13,398,411
1925.....	10	11	38,081,583	1,926	2,511,400	2,848,904	14,046,704
1926.....	7	12	41,380,000	2,340	3,052,662	3,424,156	13,013,283
LIME							
1922.....	57	62	4,984,910	1,110	1,013,486	725,168	3,165,005
1923.....	50	56	6,050,954	1,197	1,191,416	953,709	3,266,608
1924.....	44	49	5,165,964	927	970,672	740,878	3,178,541
1925.....	56	62	5,154,046	1,006	960,434	762,814	3,387,652
1926.....	54	60	5,825,809	1,106	1,082,854	788,990	3,781,484
SAND AND GRAVEL							
1922.....	342	342	4,098,928	750	684,626	99,069	3,502,935
1923.....	598	598	4,487,005	801	692,161	99,409	3,016,518
1924.....	558	558	5,194,037	927	848,741	134,378	3,181,083
1925.....	622	622	5,286,268	1,650	1,231,856	158,645	3,220,410
1926.....	580	1,634	6,274,090	5,672	1,557,232	151,236	4,941,434
STONE							
1922.....	162	162	13,004,233	2,859	2,673,241	167,139	5,989,864
1923.....	158	158	13,725,677	2,850	2,665,520	400,517	5,920,578
1924.....	170	170	14,317,148	2,877	2,768,256	383,800	6,407,757
1925.....	201	201	12,233,773	4,148	3,599,653	479,489	7,464,777
1926.....	229	234	12,760,078	4,510	3,763,726	514,374	7,865,874
TOTAL OTHER STRUCTURAL MATERIALS							
1922.....	567	577	63,661,808	6,472	6,686,593	3,448,832	28,096,285
1923.....	812	822	62,548,130	6,690	7,100,881	4,263,049	27,268,365
1924.....	778	787	61,443,723	6,568	7,119,291	4,131,767	26,165,792
1925.....	889	896	60,755,670	8,730	8,303,343	4,249,852	28,119,543
1926.....	870	1,940	66,239,977	13,628	9,456,474	4,878,756	29,602,075
Total Clay Products and Other Structural Materials							
1922.....	794	809	94,830,711	11,153	11,433,934	5,417,924	39,534,741
1923.....	1,031	1,043	94,842,501	11,430	12,112,581	6,930,164	37,751,381
1924.....	983	997	91,254,717	10,688	11,160,609	6,010,861	35,380,869
1925.....	1,072	1,084	88,516,534	12,866	12,337,418	6,159,443	37,649,234
1926.....	1,064	2,140	94,392,039	18,023	13,803,161	6,958,810	39,959,398
GRAND TOTAL OF ALL INDUSTRIES							
1922.....	1,944	6,654	493,694,823	62,249	75,026,501	11,096,564	182,858,578
1923.....	2,295	8,150	578,837,012	66,952	91,334,877	21,257,336	198,301,049
1924.....	2,214	7,840	632,443,946	64,328	82,787,421	19,587,452	194,002,488
1925.....	2,354	8,553	632,075,145	65,090	85,103,118	20,565,800	215,201,873
1926.....	2,427	9,345	688,750,008	77,931	94,216,813	23,518,304	241,138,661

\* Includes kaolin and other clays.

(a) Fuel only in 1922.

(b) Includes value of pig iron made from Canadian ore deducting the net value of ores treated, in 1922, 1923 and 1924.

(c) Production of peat for 1922 and 1925 included in the miscellaneous non-metallics.

## MINERAL PRODUCTION OF CANADA

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Table 13—Principal Statistics of the Mineral Industry in Canada, by Provinces, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed \$	Number of employees	Salaries and wages \$	†Cost of fuel and electricity \$	Value of bullion, ore, concentrates, residues and other minerals shipped from the mines, smelters, brick and cement plants and quarries \$
*NOVA SCOTIA							
1922.....	83	121	64,407,944	15,672	13,912,093	1,852,156	25,914,598
1923.....	80	113	63,544,560	15,280	17,613,514	2,927,317	29,645,670
1924.....	72	103	59,608,296	14,172	14,247,382	2,772,595	23,820,369
1925.....	67	95	59,456,860	9,905	12,488,285	2,229,275	17,624,283
1926.....	72	95	60,312,087	13,993	16,109,519	2,941,725	28,870,673
NEW BRUNSWICK							
1922.....	48	84	2,736,220	1,235	1,068,194	128,498	2,263,692
1923.....	44	79	3,300,139	1,334	1,339,229	154,823	2,462,457
1924.....	39	85	3,362,851	1,190	1,104,918	120,950	1,969,260
1925.....	36	85	3,070,322	1,113	1,003,169	114,629	1,743,858
1926.....	42	91	3,533,577	1,127	952,696	143,264	1,811,104
QUEBEC							
1922.....	164	169	77,191,610	6,288	6,073,236	1,545,089	17,647,939
1923.....	152	156	79,271,782	7,124	7,446,475	3,031,056	20,270,322
1924.....	240	242	77,163,613	6,953	7,300,935	2,800,763	18,921,782
1925.....	294	301	83,449,054	8,700	8,566,616	3,152,395	23,817,182
1926.....	331	1,399	112,460,615	15,555	11,912,344	4,662,165	31,629,450
ONTARIO							
1922.....	871	5,429	175,931,022	15,324	18,688,145	4,312,403	69,991,457
1923.....	1,224	5,613	240,899,437	17,978	23,469,827	9,932,155	71,082,009
1924.....	1,120	5,255	261,071,390	19,265	24,624,854	8,679,474	75,266,531
1925.....	1,210	5,898	258,967,755	19,346	25,999,951	8,463,276	86,711,647
1926.....	1,142	5,753	278,657,190	20,060	26,987,635	8,668,666	84,775,751
MANITOBA							
1922.....	32	33	5,714,508	638	651,585	347,980	2,257,843
1923.....	29	30	5,776,757	629	680,183	328,521	1,767,871
1924.....	24	25	7,973,261	541	612,891	268,250	1,534,253
1925.....	26	26	4,948,621	699	711,735	315,005	2,275,832
1926.....	31	32	10,636,439	780	911,424	442,998	3,069,631
SASKATCHEWAN							
1922.....	71	71	4,202,597	587	577,117	38,170	1,255,470
1923.....	78	78	4,747,582	738	760,392	65,274	1,047,583
1924.....	81	81	4,157,426	678	669,000	65,641	1,128,100
1925.....	68	68	3,732,909	652	647,014	91,025	1,076,392
1926.....	73	74	5,119,845	742	708,612	111,661	1,193,394
ALBERTA							
1922.....	306	357	65,918,600	10,343	16,131,521	734,678	27,872,136
1923.....	391	444	70,843,708	11,295	19,306,818	1,004,017	31,287,536
1924.....	387	446	87,003,765	8,716	13,684,225	991,549	22,344,940
1925.....	391	465	86,735,632	10,486	13,808,354	1,226,903	25,318,866
1926.....	425	473	102,875,177	10,733	14,499,210	1,380,096	26,977,027
BRITISH COLUMBIA							
1922.....	246	267	85,600,408	11,680	17,121,493	2,097,615	34,083,724
1923.....	153	163	97,357,573	12,105	19,913,678	3,682,428	38,612,899
1924.....	159	194	107,611,494	12,422	19,876,613	3,770,384	48,231,578
1925.....	161	193	107,257,567	13,727	21,440,904	4,801,665	54,895,913
1926.....	226	272	108,594,954	14,566	21,556,415	4,913,255	61,061,011
YUKON							
1922.....	123	123	11,991,914	482	803,117	39,975	1,571,719
1923.....	144	1,474	13,095,474	469	804,761	131,745	2,124,702
1924.....	92	1,409	24,491,850	391	666,603	117,846	785,675
1925.....	101	1,422	24,456,425	462	527,090	171,627	1,737,900
1926.....	85	1,156	6,560,124	375	578,958	254,474	1,750,620
Canada							
1922.....	1,844	6,654	493,694,823	62,249	75,026,501	11,096,564	182,858,578
1923.....	2,295	8,150	578,837,012	66,952	91,334,877	21,257,336	198,301,049
1924.....	2,214	7,840	632,443,946	64,328	82,787,421	19,587,452	194,002,488
1925.....	2,354	8,553	632,075,145	65,690	85,103,118	20,565,800	215,201,873
1926.....	2,427	9,345	688,750,008	77,931	94,216,813	23,518,304	241,138,661

\* Includes a small production from Prince Edward Island.

† Electricity was not included in 1922.

Table 14—Principal Statistics of the Mineral Industry in Canada by Main Classes and by Provinces, 1926

(a) Eastern Canada and Total for Canada

Industry	Nova Scotia	New Brunswick	Quebec	Ontario	Total for Eastern Canada	Total for Canada
<b>METAL MINING—</b>						
Number of plants.....	7		72	89	168	1,504
Capital employed..... \$	707,594		42,473,483	202,300,972	245,482,049	320,248,840
Number of salaried employees—						
Male.....	6		318	728	1,052	1,681
Female.....			19	50	69	105
Number of wage-earners.....	145		2,250	11,555	13,950	21,956
Total employees.....	151		2,587	12,333	15,071	23,742
Salaries..... \$	12,000		391,247	2,208,805	2,612,052	4,091,840
Wages..... \$	95,971		2,336,709	16,948,329	19,381,009	31,941,958
Total..... \$	107,971		2,727,956	19,157,134	21,993,061	36,033,798
Cost of fuel and electricity..... \$	13,133		961,615	5,052,796	6,027,544	10,023,885
Net value of products shipped..... \$	31,638		7,570,787	59,405,705	67,008,130	115,939,119
<b>NON-METAL MINING INCLUDING FUELS—</b>						
<i>FUELS</i>						
Number of plants.....	43	63		4,892	4,998	5,534
Capital employed..... \$	54,313,002	2,368,110		32,527,675	89,148,787	223,148,718
Number of salaried employees—						
Male.....	485	33		344	862	1,857
Female.....	37	5		77	119	230
Number of wage-earners.....	12,100	589		572	13,261	28,169
Total employees.....	12,622	627		993	14,242	30,256
Salaries..... \$	1,003,717	94,461		472,865	1,571,043	4,021,467
Wages..... \$	14,041,702	491,246		483,510	15,016,458	34,057,950
Total..... \$	15,045,419	585,707		956,375	16,587,501	38,079,417
Cost of fuel and electricity..... \$	2,722,144	47,499		26,324	2,795,967	4,750,037
Net value of products shipped..... \$	26,845,226	868,485		4,788,814	32,502,525	68,743,933
<b>OTHER NON-METAL MINING—</b>						
Number of plants.....	16	4	56	67	143	167
Capital employed..... \$	3,031,920	644,318	37,364,351	6,381,074	47,421,663	50,960,411
Number of salaried employees—						
Male.....	36	11	164	76	287	311
Female.....	4	3	15	17	39	42
Number of wage-earners.....	833	246	3,139	1,060	5,278	5,557
Total employees.....	873	260	3,318	1,153	5,604	5,910
Salaries..... \$	87,352	41,880	393,514	186,365	709,111	764,406
Wages..... \$	620,680	158,118	3,528,713	920,847	5,228,358	5,536,031
Total..... \$	708,032	199,998	3,922,227	1,107,212	5,937,469	6,300,437
Cost of fuel and electricity..... \$	99,830	28,093	1,081,943	455,572	1,665,438	1,785,572
Net value of products shipped..... \$	1,367,621	559,386	10,835,961	2,930,494	15,693,462	16,496,211
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Number of plants.....	29	24	1,271	705	2,029	2,140
Capital employed..... \$	2,259,571	581,149	32,622,781	37,447,469	72,910,970	94,392,039
Number of salaried employees—						
Male.....	16	25	246	311	598	762
Female.....	1	1	18	65	85	101
Number of wage-earners.....	330	214	9,386	5,205	15,135	17,160
Total employees.....	347	240	9,650	5,581	15,818	18,023
Salaries..... \$	36,820	35,693	501,205	761,074	1,334,792	1,686,827
Wages..... \$	211,277	131,298	4,760,956	5,005,840	10,109,371	12,116,334
Total..... \$	248,097	166,991	5,262,161	5,766,914	11,444,163	13,803,161
Cost of fuel and electricity..... \$	106,618	67,672	2,618,607	3,133,974	5,926,871	6,958,810
Net value of products shipped..... \$	626,188	383,233	13,222,702	17,650,738	31,882,861	39,959,398
<b>ALL INDUSTRIES</b>						
Number of plants.....	95	91	1,399	5,753	7,338	9,345
Capital employed..... \$	60,312,087	3,533,577	112,460,615	278,657,190	454,963,469	688,750,008
Number of salaried employees—						
Male.....	543	69	728	1,459	2,799	4,611
Female.....	42	9	52	209	312	478
Number of wage-earners.....	13,408	1,049	14,775	18,392	47,624	72,842
Total employees.....	13,993	1,127	15,555	20,060	50,735	77,931
Salaries..... \$	1,139,889	172,034	1,285,966	3,629,109	6,226,998	10,564,540
Wages..... \$	14,969,630	780,662	10,626,378	23,358,526	49,735,196	83,652,273
Total..... \$	16,109,519	952,696	11,912,344	26,987,635	55,962,194	94,216,813
Cost of fuel and electricity..... \$	2,941,725	143,264	4,662,165	8,668,666	16,415,820	23,518,304
Net value of products shipped..... \$	28,870,673	1,811,104	31,629,450	84,775,751	147,086,978	241,138,661

Table 14—Principal Statistics of the Mineral Industry in Canada by Main Classes and by Provinces, 1926—Concluded

(b) Western Canada

Industry	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Total for Western Canada
<b>METAL MINING—</b>						
Number of plants.....	3			178	1,155	1,336
Capital employed..... \$	3,703,797			64,705,670	6,357,324	74,766,791
Number of salaried employees—						
Male.....	9			598	22	629
Female.....				32	4	36
Number of wage-earners.....	94			7,565	347	8,006
Total employees.....	103			8,195	373	8,671
Salaries..... \$	25,109			1,392,804	61,875	1,479,788
Wages..... \$	146,686			11,897,780	516,483	12,560,949
Total..... \$	171,795			13,290,584	578,358	14,040,737
Cost of fuel and electricity..... \$	19,965			3,721,922	254,454	3,996,341
Net value of products shipped..... \$				47,181,169	1,749,820	48,930,989
<b>NON-METAL MINING INCLUDING FUELS—</b>						
<i>FUELS</i>						
Number of plants.....	2	57	443	33	1	536
Capital employed..... \$		4,075,445	97,634,353	32,087,333		133,999,831
Number of salaried employees—						
Male.....		44	734	217		995
Female.....		4	87	20		111
Number of wage-earners.....		488	9,323	5,095		14,908
Total employees.....		536	10,144	5,332		16,014
Salaries..... \$		80,615	1,800,020	569,789		2,450,424
Wages..... \$		474,871	12,021,903	6,544,118		19,041,492
Total..... \$		555,486	13,821,923	7,113,907		21,491,916
Cost of fuel and electricity..... \$		27,446	1,061,006	865,598		1,954,070
Value of products shipped..... \$		819,805	24,807,828	10,612,915		36,241,408
<i>OTHER NON-METAL MINING</i>						
Number of plants.....	1	3	3	17		24
Capital employed..... \$			261,260	1,961,023		3,538,748
Number of salaried employees—						
Male.....			4	9		24
Female.....			1			3
Number of wage-earners.....			20	129		279
Total employees.....			25	138		306
Salaries..... \$			5,148	18,312		55,295
Wages..... \$			20,055	127,723		307,673
Total..... \$			25,203	146,035		362,968
Cost of fuel and electricity..... \$			19,185	19,697		120,134
Net value of products shipped..... \$			24,808	302,300		802,749
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Number of plants.....	26	14	27	44		111
Capital employed..... \$	5,881,177	779,400	4,979,564	9,840,928		21,481,069
Number of salaried employees—						
Male.....	42	16	47	59		164
Female.....	2		5	9		16
Number of wage-earners.....	527	153	512	833		2,025
Total employees.....	571	169	564	901		2,205
Salaries..... \$	83,490	23,252	94,688	150,605		352,035
Wages..... \$	509,051	85,232	557,896	855,284		2,006,963
Total..... \$	592,541	108,484	652,084	1,005,889		2,358,998
Cost of fuel and electricity..... \$	384,322	41,674	299,905	306,038		1,031,939
Net value of products shipped..... \$	2,608,110	359,409	2,144,391	2,964,627		8,076,537
<b>ALL INDUSTRIES</b>						
Number of plants.....	32	74	473	272	1,156	2,007
Capital employed..... \$	10,636,439	5,119,845	102,875,177	108,594,954	6,560,124	232,786,539
Number of salaried employees—						
Male.....	61	61	785	883	22	1,812
Female.....	4	4	93	61	4	166
Number of wage-earners.....	715	677	9,855	13,622	349	25,218
Total employees.....	780	742	10,733	14,566	375	27,196
Salaries..... \$	137,434	106,867	1,899,856	2,131,510	61,875	4,337,542
Wages..... \$	773,990	601,745	12,599,354	19,424,905	517,083	33,917,077
Total..... \$	911,424	708,612	14,499,210	21,556,415	578,958	38,254,619
Cost of fuel and electricity..... \$	442,998	111,661	1,380,096	4,913,255	254,474	7,102,484
Net value of products shipped..... \$	3,069,631	1,193,394	26,977,027	61,061,011	1,750,620	94,051,683

Table 15—Employees, Salaries and Wages in the Mineral Industry in Canada, by Provinces, 1925 and 1926

Province	*Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female					
1925					\$	\$	\$
Nova Scotia.....	526	40	9,339	9,905	1,073,242	11,415,043	12,488,285
New Brunswick.....	67	10	1,036	1,113	143,762	859,407	1,003,169
Quebec.....	436	34	8,230	8,700	887,385	7,679,231	8,566,616
Ontario.....	1,321	207	17,818	19,346	3,343,833	22,566,118	25,909,951
Manitoba.....	54	4	641	699	113,684	598,051	711,735
Saskatchewan.....	58	4	590	652	105,654	541,360	647,014
Alberta.....	760	52	9,674	10,486	1,784,839	12,023,515	13,808,354
British Columbia.....	859	65	12,803	13,727	2,119,976	19,320,928	21,440,904
Yukon.....	9	1	452	462	25,759	501,331	527,090
<b>Canada.....</b>	<b>4,090</b>	<b>417</b>	<b>60,583</b>	<b>65,090</b>	<b>9,598,134</b>	<b>75,504,984</b>	<b>85,103,118</b>
1926							
Nova Scotia.....	543	42	13,408	13,993	1,139,889	14,969,630	16,109,519
New Brunswick.....	69	9	1,049	1,127	172,034	780,662	952,696
Quebec.....	728	52	14,775	15,555	1,285,966	10,626,378	11,912,344
Ontario.....	1,459	209	18,392	20,060	3,629,109	23,358,526	26,987,635
Manitoba.....	61	4	715	780	137,434	773,990	911,424
Saskatchewan.....	61	4	677	742	106,867	601,745	708,612
Alberta.....	785	93	9,855	10,733	1,899,856	12,599,354	14,499,210
British Columbia.....	883	61	13,622	14,566	2,131,510	19,424,905	21,556,415
Yukon.....	22	4	349	375	61,875	517,083	578,958
<b>Canada.....</b>	<b>4,611</b>	<b>478</b>	<b>72,842</b>	<b>77,931</b>	<b>10,564,540</b>	<b>83,652,273</b>	<b>94,216,813</b>

\*Note on the Method of Computing the Average Number of Wage-earners for Each Industry.—If a company works only 3 months in the year, the average number of wage-earners for this company is obtained by adding the monthly figures and dividing by 3. If a second company operates every month in the year, the average number of wage-earners for this company is obtained by adding the monthly figures and dividing by 12. The average number of wage-earners for each other company in the industry is computed in the same way. The average number of wage-earners in the industry during the year is the sum of these individual averages.

Table 16—Employees, Salaries and Wages in the Mineral Industry in Canada, by Industries, 1925 and 1926

Industry and Year	†Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female					
1925					\$	\$	\$
<b>METAL MINING</b>							
Alluvial Gold.....			363	363		347,448	347,448
Auriferous Quartz.....		24	6,607	7,052	1,274,496	10,657,452	11,931,948
Copper-Gold-Silver.....	194	17	2,163	2,374	416,065	3,139,779	3,555,844
Silver-Cobalt.....	126	10	1,652	1,788	358,190	2,218,224	2,576,414
Silver-Lead-Zinc.....	144	6	2,388	2,538	322,085	3,545,528	3,867,613
Nickel-Copper.....	20		1,392	1,412	64,738	1,802,479	1,867,217
Miscellaneous.....	4	1	28	33	4,500	12,801	17,301
Non-Ferrous Smelting and Refining.....	397	40	4,667	5,104	1,079,242	7,489,755	8,568,997
<b>NON-METAL MINING INCLUDING FUELS</b>							
<b>FUELS</b>							
Coal.....	1,452	90	23,490	25,032	3,301,813	29,898,496	33,200,309
Natural Gas.....	327	82	650	1,059	497,741	709,134	1,206,875
Petroleum.....	23	2	234	259	33,722	284,379	318,101

† See note page 30.

Table 16—Employees, Salaries and Wages in the Mineral Industry in Canada, by Industries, 1925 and 1926—Concluded

Industry and Year	*Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female					
1925					\$	\$	\$
<i>OTHER NON-METAL MINING</i>							
Abrasives.....	6		56	62	14,000	41,466	55,466
Asbestos.....	107	10	2,465	2,582	280,085	2,717,022	2,997,107
Feldspar.....	11		229	240	19,507	146,259	165,766
Graphite.....	7	2	97	106	14,070	60,951	75,021
Gypsum.....	41	10	988	1,039	127,417	891,168	1,018,585
Iron Oxides.....	2		45	47	3,869	31,585	35,454
Mica.....	6	3	260	269	12,326	110,753	123,079
Quartz.....	14	1	138	153	33,409	112,085	145,494
Salt.....	45	12	345	402	114,960	352,527	467,487
Talc and Soapstone.....	8	2	82	92	14,080	60,439	74,519
Miscellaneous.....	10	3	205	218	29,103	120,552	149,655
<i>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</i>							
Cement.....	97	8	1,821	1,926	213,666	2,297,734	2,511,400
Clay Products.....	272	38	3,826	4,136	630,793	3,403,282	4,034,075
Lime.....	75	14	917	1,006	145,983	814,451	960,434
Sand and Gravel.....	85	13	1,552	1,650	209,512	1,022,344	1,231,856
Stone.....	196	29	3,923	4,148	382,762	3,216,891	3,599,653
<b>Total.....</b>	<b>4,090</b>	<b>417</b>	<b>60,583</b>	<b>65,090</b>	<b>9,598,134</b>	<b>75,504,984</b>	<b>85,103,118</b>
1926							
<i>METAL MINING</i>							
Alluvial Gold.....	10	2	273	285	34,089	305,752	339,841
Auriferous Quartz.....	481	23	7,159	7,663	1,398,901	10,941,722	12,340,623
Copper-Gold-Silver.....	244	15	3,144	3,403	530,079	4,016,414	4,546,493
Silver-Cobalt.....	143	13	1,623	1,779	400,403	2,415,527	2,815,930
Silver-Lead-Zinc.....	190	7	2,727	2,924	419,352	4,012,378	4,431,730
Nickel-Copper.....	21		1,416	1,437	65,625	1,897,992	1,963,617
Miscellaneous.....	2		23	25	2,455	8,171	10,626
Non-Ferrous Smelting and Refining.....	590	45	5,591	6,226	1,240,936	8,344,002	9,584,938
<i>NON-METAL MINING INCLUDING FUELS</i>							
<i>FUELS</i>							
Coal.....	1,390	100	26,878	28,368	3,238,520	32,603,276	35,841,796
Natural Gas.....	408	99	747	1,254	674,811	773,967	1,448,778
Petroleum.....	59	31	544	634	108,136	680,707	788,843
<i>OTHER NON-METAL MINING</i>							
Abrasives.....	7	1	94	102	21,190	68,879	90,069
Asbestos.....	129	12	2,656	2,797	328,813	3,215,284	3,544,097
Feldspar.....	12	1	397	410	18,450	195,121	213,571
Graphite.....	8	2	58	68	15,255	47,809	63,064
Gypsum.....	58	10	1,300	1,368	159,835	1,095,592	1,255,427
Iron Oxides.....	2		43	45	3,100	35,248	38,348
Mica.....	10	2	196	208	17,668	110,601	128,269
Quartz.....	16	1	226	243	28,351	180,488	208,839
Salt.....	41	10	333	384	121,014	361,637	482,651
Talc and Soapstone.....	8	1	83	92	14,940	59,694	74,634
Miscellaneous.....	20	2	171	193	35,790	165,678	201,468
<i>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</i>							
Cement.....	114	10	2,216	2,340	272,770	2,779,892	3,052,662
Clay Products.....	287	42	4,066	4,395	673,657	3,673,030	4,346,687
Lime.....	77	12	1,017	1,106	157,950	924,904	1,082,854
Sand and Gravel.....	72	8	5,592	5,672	171,018	1,386,214	1,557,232
Stone.....	212	29	4,269	4,510	411,432	3,352,294	3,763,726
<b>Total.....</b>	<b>4,611</b>	<b>478</b>	<b>72,842</b>	<b>77,931</b>	<b>10,564,540</b>	<b>83,652,273</b>	<b>94,216,813</b>

\* See note page 30.

Table 17—Wage-Earners in the Mineral Industry in Canada, by Months and by Classes, 1925 and 1926

Month	Metal Mining	Non-Metal Mining including Fuels			Clay Products and other Structural Materials			Total
		Fuels	Other Non-Metal-lics	Total	Clay Products	Other structural materials	Total	
1925								
January.....	17,356	31,690	3,467	35,157	1,871	4,043	5,914	58,427
February.....	17,331	30,055	3,516	33,571	1,889	4,323	6,212	57,114
March.....	17,601	25,196	3,635	28,831	2,369	5,027	7,396	53,828
April.....	17,833	16,343	3,992	20,335	3,094	5,979	9,073	47,241
May.....	17,994	15,347	4,470	19,817	4,011	7,293	11,304	49,115
June.....	18,705	16,032	4,946	20,978	4,446	8,091	12,537	52,220
July.....	18,611	15,861	5,082	20,943	4,457	8,365	12,822	52,376
August.....	19,002	24,168	5,138	29,306	4,125	8,136	12,261	60,569
September.....	19,276	27,361	4,953	32,314	3,749	8,284	12,033	63,623
October.....	19,749	28,888	4,874	33,762	3,272	8,004	11,276	64,787
November.....	19,422	30,551	4,820	35,371	2,884	6,644	9,528	64,321
December.....	18,876	30,743	4,501	35,244	2,560	5,841	8,401	62,521
*Average.....	19,269	24,374	4,916	29,284	3,826	8,213	12,039	60,583
1926								
January.....	19,303	29,672	3,872	33,544	1,936	4,703	6,639	59,486
February.....	19,245	27,653	4,284	31,937	1,963	5,011	6,974	58,156
March.....	19,499	25,021	4,284	29,305	2,501	5,364	7,955	56,759
April.....	19,712	25,357	4,767	30,124	3,179	6,500	9,679	59,515
May.....	19,783	25,675	5,335	31,010	4,188	8,152	12,340	63,133
June.....	20,428	26,007	5,640	31,647	4,605	13,287	17,982	70,057
July.....	20,773	26,058	5,689	31,747	4,686	13,886	18,572	71,092
August.....	21,466	27,166	5,710	32,876	4,505	9,239	13,744	68,086
September.....	21,969	28,741	5,603	34,344	3,950	8,943	12,893	69,206
October.....	22,488	30,632	5,701	36,333	3,790	8,736	12,526	71,347
November.....	21,954	31,887	5,663	37,550	3,273	7,688	10,961	70,465
December.....	21,000	32,390	5,065	37,455	2,714	5,834	8,548	67,003
*Average.....	21,956	28,169	5,557	33,726	4,066	13,094	17,169	72,842

\* See note page 30.

Table 18—Wage-Earners in the Mineral Industry in Canada by Months and by Provinces, 1925 and 1926

Month	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Yukon	Canada
1925										
January.....	12,593	876	4,851	14,173	240	789	12,407	12,069	429	58,427
February.....	12,618	871	5,304	14,022	223	682	10,900	12,063	431	57,114
March.....	9,735	877	5,778	14,974	258	592	9,176	11,995	443	53,828
April.....	3,323	975	6,023	16,114	445	432	7,497	11,986	446	47,241
May.....	3,487	1,068	7,099	17,390	533	390	7,086	11,610	452	49,115
June.....	3,518	1,181	7,848	18,169	695	410	7,725	12,217	457	52,220
July.....	3,573	1,147	8,232	17,884	774	427	7,493	12,395	451	52,376
August.....	11,103	1,080	8,135	17,850	703	399	8,306	12,543	450	60,569
September.....	12,510	1,026	8,023	17,816	698	508	9,779	12,802	461	63,623
October.....	12,601	940	8,007	17,881	556	802	10,598	12,944	458	64,787
November.....	12,960	882	7,372	16,864	467	836	11,588	12,882	470	64,321
December.....	12,725	897	6,376	16,272	466	781	11,803	12,741	460	62,521
*Average.....	9,339	1,036	8,239	17,818	641	599	9,674	12,803	452	60,583
1926										
January.....	11,941	900	6,219	15,341	338	689	11,183	12,732	143	59,486
February.....	10,963	882	7,032	15,113	392	651	10,286	12,686	151	58,156
March.....	9,987	925	7,404	15,523	456	582	9,033	12,692	157	56,759
April.....	12,634	922	7,981	16,256	561	429	7,935	12,568	229	59,515
May.....	13,776	999	9,227	17,356	696	515	7,276	13,013	275	63,133
June.....	13,908	1,128	14,317	18,124	817	505	7,863	13,077	318	70,057
July.....	14,089	1,106	14,937	18,484	889	464	7,895	12,925	313	71,102
August.....	14,008	1,071	10,525	18,558	900	443	8,999	13,272	320	68,086
September.....	13,956	1,025	10,405	18,525	736	541	10,351	13,358	309	69,206
October.....	14,307	996	10,713	18,470	704	735	11,381	13,775	266	71,347
November.....	14,551	972	10,011	17,499	535	815	12,176	13,680	226	70,465
December.....	14,681	892	8,431	16,300	474	746	12,265	13,036	178	67,003
*Average.....	13,408	1,049	14,775	18,392	715	677	9,855	13,622	349	72,842

\* See note page 30.

Table 19—Wage-Earners Working in Month of Greatest Employment Classified According to the Number of Hours Worked per Day for the Mineral Industry in Canada, by Provinces and by Industries, 1926

Province and Industry	Number of wage-earners working			
	8 hours or less per day	9 hours	10 hours	Over 10 hours
<b>By Provinces—</b>				
Nova Scotia.....	13,086	1,421	255	112
New Brunswick.....	160	476	221	14
Quebec.....	1,854	2,455	6,120	806
Ontario.....	11,647	3,158	4,137	561
Manitoba.....	97	114	525	55
Saskatchewan.....	180	97	568	18
Alberta.....	11,459	307	651	247
British Columbia.....	14,622	170	17	3
Yukon.....	197			
<b>Canada.....</b>	<b>53,302</b>	<b>8,198</b>	<b>12,494</b>	<b>1,816</b>
<b>By Industries—</b>				
<b>METAL MINING—</b>				
Alluvial Gold.....		Not available		
Auriferous Quartz.....	6,823	926	89	46
Copper-Gold-Silver.....	2,618	1,042	35	10
Silver-Cobalt.....	1,215	507	6	26
Silver-Lead-Zinc.....	2,693	325	117	41
Nickel-Copper.....	1,569			
Miscellaneous.....	10	9		4
Non-Ferrous Smelting and Refining.....	5,791	458	140	2
<b>NON-METAL MINING INCLUDING FUELS—</b>				
<b>FUELS—</b>				
Coal.....	29,628	813	738	30
Natural Gas.....	209	3	55	19
Petroleum.....	172	14	56	64
<b>OTHER NON-METAL MINING—</b>				
Abrasives.....	16	30	147	
Asbestos.....	21		2,703	117
Feldspar.....	29	313	183	
Graphite.....			59	7
Gypsum.....	64	979	172	108
Iron Oxides.....			54	
Mica.....	36	123	74	
Quartz.....		26	221	6
Salt.....	141	149	8	22
Talc and Soapstone.....	14	8	69	18
Miscellaneous.....		Not available		
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>				
Cement.....	694	296	1,065	635
Clay Products.....	760	1,084	2,584	251
Lime.....	205	184	340	166
Sand and Gravel.....	93	111	413	12
Stone.....	501	798	3,166	232
<b>Total.....</b>	<b>53,302</b>	<b>8,198</b>	<b>12,494</b>	<b>1,816</b>

Table 20—Fuel and Electricity Used in the Mineral Industry in Canada, by Kinds and by Industries, 1925

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Electric power	Total value
	Tons	Tons	Tons	Tons	Imp. gal.	Mcu.ft.	Cords	\$	K.W.H.	\$
<b>METAL MINING—</b>										
Auriferous Quartz	Quantity 950	23,262		461	897,732		11,666		160,192,738	
	\$ 17,324	236,287		6,757	99,088		62,525	208	1,413,861	1,836,050
Copper-Gold-Silver	Quantity 6	6,834		128	439,889		10,943		55,141,056	
	\$ 90	63,132		1,342	36,558		51,190	49	261,406	413,767
Silver-Cobalt—	Quantity 615	7,532		91	262,537		7,223		18,204,808	
	\$ 9,629	98,430		1,254	48,685		44,146	38,722	258,008	498,874
Silver-Lead-Zinc—	Quantity	17,062		608	219,779		6,344		39,761,043	
	\$	121,448		5,369	109,730		40,332	40	307,202	584,121
Nickel-Copper—	Quantity 55	3,427		335	29,702		4		30,945,186	
	\$ 889	29,418		4,043	3,455		27		67,738	105,570
Miscellaneous—	Quantity								143,600	
	\$								2,007	2,007
Non-Ferrous Smelting and Refining—	Quantity 149	127,919		257,506	6,008,791	245,257	5,347		307,674,451	
	\$ 2,406	788,894		2,664,241	517,818	41,426	33,769		1,232,120	5,280,674
<b>Total.....</b>	<b>Quantity 1,775</b>	<b>186,036</b>		<b>259,129</b>	<b>7,858,430</b>	<b>245,257</b>	<b>41,527</b>		<b>612,062,882</b>	
	<b>\$ 30,338</b>	<b>1,337,609</b>		<b>2,683,066</b>	<b>815,334</b>	<b>41,426</b>	<b>231,989</b>	<b>39,019</b>	<b>3,542,342</b>	<b>8,721,063</b>

Table 20—Fuel and Electricity Used in the Mineral Industry in Canada, by Kinds and by Industries, 1925—Concluded

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Electric power	Total value
	Tons	Tons	Tons	Tons	Imp. gal.	M cu. ft.	Cords	\$	K.W.H.	\$
<b>NON-METAL MINING—INCLUDING FUELS</b>										
Coal—										
Quantity		687,587	159,843						96,720,444	
\$		2,353,496	145,182						1,570,956	<b>4,069,634</b>
Natural Gas—										
Quantity		4				27,298			79,930	
\$		25				11,222			2,149	<b>13,396</b>
Petroleum—										
Quantity		35				1,480	33		1,559,883	
\$		300				824	160		19,706	<b>20,990</b>
Total—										
Quantity		687,626	159,843			28,778	33		98,360,257	
\$		2,353,821	145,182			12,046	160		1,592,811	<b>4,104,020</b>
<b>OTHER NON-METAL MINING</b>										
Abrasives—										
Quantity		475			1,115		501			
\$		3,585			240		1,583			<b>5,408</b>
Asbestos—										
Quantity	10,751	34,993		4,267			50		60,506,285	
\$	78,072	256,945		41,897			150		546,175	<b>923,239</b>
Feldspar—										
Quantity		865			5,320		767			
\$		7,073			1,392		2,676			<b>11,141</b>
Graphite—										
Quantity		250			19,611		2,046		300,000	
\$		2,500			2,447		7,271		2,500	<b>14,718</b>
Gypsum—										
Quantity		16,179	262	673	45,685	4,032	672		10,356,154	
\$		108,466	1,312	6,166	12,028	1,874	1,944		57,859	<b>189,649</b>
Iron Oxides—										
Quantity	40	603			3,585		1,150		147,696	
\$	720	4,819			847		6,750		2,937	<b>16,073</b>
Mica—										
Quantity		112			350		572			
\$		915			100		3,513			<b>4,528</b>
Quartz—										
Quantity		3,056			2,802		30		84,000	
\$		17,032			561		150		2,752	<b>20,495</b>
Salt—										
Quantity		57,081	1,665		6,200		40		1,179,094	
\$		278,067	10,359		1,288		200	6,315	19,139	<b>315,368</b>
Talc and Soapstone—										
Quantity		296			1,133		610		1,563,000	
\$		2,200			384		2,340		17,294	<b>22,218</b>
Miscellaneous—										
Quantity		3,871			242,810		868		270,000	
\$		29,136			24,828		1,724		2,749	<b>58,437</b>
Total—										
Quantity	10,791	117,731	1,927	4,940	328,661	4,032	7,306		74,406,229	
\$	78,792	710,738	11,671	48,063	44,115	1,874	28,301	6,315	651,405	<b>1,581,274</b>
<b>Total Non-Metal Mining—</b>										
Quantity	<b>10,791</b>	<b>805,407</b>	<b>161,770</b>	<b>4,940</b>	<b>328,661</b>	<b>32,810</b>	<b>7,339</b>		<b>172,766,486</b>	
\$	<b>78,792</b>	<b>3,064,559</b>	<b>156,853</b>	<b>48,063</b>	<b>44,115</b>	<b>13,920</b>	<b>28,461</b>	<b>6,315</b>	<b>2,244,216</b>	<b>5,685,294</b>
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</b>										
Clay Products—										
Quantity	66	203,346	3,843	2,691	151,250	546,458	44,256		12,455,033	
\$	951	1,372,147	13,863	21,546	19,844	27,779	235,295		218,166	<b>1,909,591</b>
Cement—										
Quantity		426,462			6,082				131,143,391	
\$		2,227,593			1,472				619,839	<b>2,848,904</b>
Lime—										
Quantity	1,582	63,654	38	5,622	1,688	55,737	59,180		3,123,662	
\$	7,173	393,827	329	48,756	493	6,777	257,309	3,276	44,874	<b>762,814</b>
Sand and Gravel—										
Quantity	80	22,058	500		43,433		372		1,029,617	
\$	580	125,617	1,776		9,736		1,550		19,386	<b>158,645</b>
Stone—										
Quantity	881	25,956		125	84,978		2,708		12,238,662	
\$	5,808	195,657		1,956	23,881		13,700		238,457	<b>479,489</b>
Total—										
Quantity	<b>2,609</b>	<b>741,476</b>	<b>4,381</b>	<b>8,438</b>	<b>287,431</b>	<b>602,195</b>	<b>106,516</b>		<b>159,990,365</b>	
\$	<b>14,512</b>	<b>4,314,871</b>	<b>15,968</b>	<b>72,258</b>	<b>55,426</b>	<b>34,556</b>	<b>507,854</b>	<b>3,276</b>	<b>1,140,722</b>	<b>6,159,443</b>
<b>Grand total—</b>										
Quantity	<b>15,175</b>	<b>1,732,919</b>	<b>166,151</b>	<b>272,507</b>	<b>8,474,522</b>	<b>880,262</b>	<b>155,382</b>		<b>944,819,733</b>	
\$	<b>123,642</b>	<b>8,717,039</b>	<b>172,821</b>	<b>2,803,327</b>	<b>914,875</b>	<b>89,902</b>	<b>768,304</b>	<b>48,610</b>	<b>6,927,280</b>	<b>20,565,800</b>

Table 21—Fuel and Electricity Used in the Mineral Industry in Canada, by Kinds and by Industries, 1926

Industry	Anthracite coal	Bituminous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Electric power	Total value
	Tons	Tons	Tons	Tons	Imp. Gal.	M cu. ft.	Cords	\$	K.W.H.	\$
<b>METAL MINING—</b>										
Alluvial Gold—										
Quantity					135				4,408,520	
\$					97		30		44,085	44,482
Auriferous Quartz—										
Quantity	990	28,193		459	1,432,177		15,747		169,287,220	
\$	19,997	293,298		8,673	145,524		67,910	957	1,547,152	2,083,811
Copper-Gold-Silver—										
Quantity	115	6,627		100	396,393		11,857		72,724,546	
\$	1,840	56,387		1,100	31,513		58,335	31	392,708	541,914
Silver-Cobalt—										
Quantity	910	9,887		93	160,928		3,893		10,929,461	
\$	14,630	111,941		1,141	31,438		19,518	29,433	310,806	518,907
Silver-Lead-Zinc—										
Quantity	64	20,976	45	499	243,515		5,753		49,395,504	
\$	1,064	119,735	360	3,908	126,568		58,279	24	348,741	658,679
Nickel-Copper—										
Quantity	3	3,190		382	30,311				32,344,297	
\$	48	24,853		4,369	3,912				62,439	95,621
Miscellaneous—										
Quantity		40							216,000	
\$		400							3,444	3,844
Non-Ferrous Smelting and Refining—										
Quantity	285	139,364		253,130	3,785,745	364,819	5,958		876,182,647	
\$	4,404	883,568		2,450,301	363,666	50,811	40,273		2,283,604	6,076,627
<b>Total—</b>										
Quantity	2,367	208,277	45	254,663	6,049,204	364,819	43,238		1,215,488,195	
\$	41,983	1,490,182	360	2,469,792	702,718	50,811	244,615	30,445	4,992,979	19,023,885
<b>NON-METAL MINING INCLUDING FUELS</b>										
<b>FUELS</b>										
Coal—										
Quantity		796,254	151,414						114,542,882	
\$		2,747,603	146,845						1,737,243	4,631,691
Natural Gas—										
Quantity		2,508			84,665	101,020			77,215	
\$		23,403			5,443	9,514			2,084	40,444
Petroleum—										
Quantity		2,544	745		184,631	956,006	70		1,899,769	
\$		16,145	6,387		9,723	23,431	280		21,936	77,902
<b>Total—</b>										
Quantity		801,306	152,159		269,296	1,057,026	70		116,519,866	
\$		2,787,151	153,232		15,166	32,945	280		1,761,263	4,750,037
<b>OTHER NON-METAL MINING</b>										
Abrasives—										
Quantity		663					722		74,000	
\$		5,150					2,611		1,955	9,716
Asbestos—										
Quantity	15,397	44,590		2,128			50		64,462,880	
\$	104,518	282,816		23,888			150		600,860	1,012,232
Feldspar—										
Quantity		935			7,546		917			
\$		8,444			2,357		3,853			14,654
Graphite—										
Quantity					30,513		1,566			
\$					5,270		5,534			10,804
Gypsum—										
Quantity		20,620		483	153,448	5,080	1,305		4,476,045	
\$		139,432		4,932	32,729	2,676	2,957		58,688	241,414
Iron Oxides—										
Quantity		903			2,980		1,220		171,598	
\$		7,130			695		6,315		3,436	17,576
Mica—										
Quantity		103			1,300		498		34,500	
\$		809			403		3,101		1,040	5,353
Quartz—										
Quantity		3,468		30	70,452		30		653,000	
\$		22,118		300	8,385		175		13,333	44,311
Salt—										
Quantity		54,177			5,600		30		1,131,352	
\$		280,249			1,168		150	6,461	17,519	324,612
Talc and Soapstone—										
Quantity		493			310		746		1,400,000	
\$		3,782			117		2,610		18,514	25,023

Table 21—Fuel and Electricity Used in the Mineral Industry in Canada, by Kinds and by Industries, 1926—Concluded

Industry	Anthra- cite coal	Bitum- inous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Electric power	Total value
<i>OTHER NON-METAL MINING</i> —Con. Miscellaneous—	Tons	Tons	Tons	Tons	Imp. Gal.	M cu. ft.	Cords	\$	K.W.H.	\$
Quantity	.....	7,775	.....	.....	314,199	.....	632	.....	765,883	.....
\$	.....	43,496	.....	.....	29,329	.....	1,365	.....	5,687	79,877
Total—	Quantity	15,397	133,727	2,763	586,348	5,080	7,716	.....	73,169,258	.....
\$	104,518	793,426	19,065	2,641	80,453	2,676	28,821	6,461	721,032	1,785,572
<b>Total Non-Metal Mining—</b>	Quantity	15,397	935,033	154,922	855,644	1,062,106	7,786	.....	189,689,124	.....
\$	104,518	3,580,577	172,297	2,641	95,619	35,621	29,101	6,461	2,482,295	6,535,609
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS</b>										
Clay Products—	Quantity	3,250	204,111	12,186	294,540	555,136	57,967	.....	15,729,185	.....
\$	17,128	1,447,523	29,057	1,976	36,043	15,223	263,881	51	253,851	2,080,054
Cement—	Quantity	441	504,577	.....	49	8,784	9,274	.....	169,280,187	.....
\$	2,016	2,664,760	.....	548	2,274	5,564	.....	.....	748,994	3,424,156
Lime—	Quantity	1,226	63,760	35	9,948	1,088	32,613	58,932	2,333,680	.....
\$	5,687	392,279	327	72,810	339	9,343	258,133	.....	50,072	788,990
Sand and Gravel—	Quantity	250	18,961	.....	50,357	.....	243	.....	873,980	.....
\$	2,754	118,833	.....	.....	12,804	.....	1,192	.....	15,653	151,236
Stone—	Quantity	625	28,918	8	100	149,224	3,981	.....	10,695,084	.....
\$	4,904	218,617	112	935	34,673	.....	18,114	.....	237,019	514,374
Total—	Quantity	5,792	820,327	12,229	12,673	503,993	597,023	121,123	198,912,116	.....
\$	32,489	4,842,012	29,496	91,590	86,133	30,130	541,320	51	1,305,589	6,958,810
<b>Grand total—</b>	Quantity	23,556	1,963,637	167,196	269,377	7,408,841	2,023,948	172,147	1,604,089,435	.....
\$	178,990	9,912,771	202,153	2,590,502	884,470	116,562	815,036	36,957	8,780,862	23,518,304

Table 22—Fuel and Electricity Used in the Mineral Industry in Canada by Provinces, 1925

Industry	Anthra- cite coal	Bitum- inous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Electric power	Total value
	Tons	Tons	Tons	Tons	Imp. gal.	M cu. ft.	Cords	\$	K.W.H.	\$
Nova Scotia—	Quantity	394,923	.....	10	54,608	.....	2,808	.....	54,973,439	.....
\$	.....	1,415,968	.....	75	13,811	.....	12,636	.....	786,785	2,229,275
New Brunswick—	Quantity	10	8,934	.....	1,745	2,735	8,962	.....	1,193,285	.....
\$	99	44,056	.....	.....	463	1,094	37,038	.....	31,879	114,629
Quebec—	Quantity	11,620	291,616	.....	5,055	101,623	35,268	.....	137,163,346	.....
\$	84,503	1,763,968	.....	50,039	22,834	.....	175,703	545	1,054,803	3,152,395
Ontario—	Quantity	3,349	572,743	.....	164,532	4,812,097	73,463	.....	344,245,602	.....
\$	37,795	3,456,041	.....	1,630,064	495,742	24,359	388,144	45,132	2,385,999	8,463,276
Manitoba—	Quantity	180	22,866	300	63	15	15,174	.....	8,976,830	.....
\$	1,052	182,132	1,641	381	.....	5	73,080	.....	56,714	315,005
Saskatchewan—	Quantity	.....	4,225	24,526	.....	248,443	220	.....	203,600	.....
\$	.....	33,667	26,430	.....	25,518	.....	1,290	.....	4,120	91,025
Alberta—	Quantity	.....	119,365	141,325	.....	546	521,548	1,673	33,012,829	.....
\$	.....	455,082	144,750	.....	250	19,897	6,728	.....	600,196	1,226,903
British Columbia and Yukon—	Quantity	16	318,247	.....	102,847	3,255,445	257,077	.....	365,050,802	.....
\$	193	1,366,125	.....	1,122,768	356,252	44,552	73,685	2,933	2,006,784	4,973,292
<b>Canada—</b>	Quantity	15,175	1,732,919	166,151	272,507	8,474,522	880,262	155,382	944,819,733	.....
\$	123,642	8,717,039	172,821	2,803,327	914,875	89,902	768,304	48,610	6,927,280	20,565,800

Table 23—Fuel and Electricity Used in the Mineral Industry in Canada, by Provinces, 1926

Industry	Anthra- cite coal	Bitum- inous coal	Lignite coal	Coke	Gasoline and fuel oil	Gas	Wood	Other fuel	Electric power	Total value
	Tons	Tons	Tons	Tons	Imp. gal.	M cu. ft.	Cords	\$	K.W.H.	\$
Nova Scotia—										
Quantity	.....	509,458	.....	3,232	138,947	17,439	4,069	.....	71,557,807	
\$	.....	1,874,840	.....	14,593	33,776	1,630	20,602	51	996,233	2,941,725
New Brunswick—										
Quantity	.....	9,538	.....	.....	1,415	26,972	12,169	.....	1,106,831	
\$	.....	47,077	.....	.....	481	6,007	61,854	.....	27,845	143,264
Quebec—										
Quantity	16,608	361,329	.....	5,470	300,323	.....	33,354	.....	600,944,099	
\$	113,655	2,183,702	.....	63,972	57,232	.....	161,579	31	2,081,994	4,662,165
Ontario—										
Quantity	6,270	588,161	158	158,098	3,817,102	35,476	72,644	.....	377,113,449	
\$	60,139	3,656,281	688	1,455,272	439,461	19,675	346,820	36,875	2,653,455	8,668,666
Manitoba—										
Quantity	196	33,695	35	52	12,570	.....	19,062	.....	12,637,679	
\$	1,215	270,152	327	2,186	5,653	.....	91,326	.....	72,139	442,998
Saskatchewan—										
Quantity	.....	4,279	29,039	.....	322,003	.....	433	.....	220,175	
\$	.....	35,340	39,948	.....	30,732	.....	2,226	.....	3,415	111,661
Alberta—										
Quantity	.....	140,303	137,919	.....	271,496	1,579,336	1,737	.....	37,373,401	
\$	.....	516,678	160,830	.....	15,923	38,364	6,885	.....	641,416	1,380,096
British Columbia and Yukon—										
Quantity	482	316,874	45	102,525	2,544,985	364,725	28,679	.....	503,135,994	
\$	3,981	1,328,701	360	1,054,479	301,212	50,886	123,744	.....	2,304,366	5,167,729
Canada—										
Quantity	23,556	1,963,637	167,196	269,377	7,408,841	2,023,948	172,147	.....	1,604,089,435	
\$	178,990	9,912,771	202,153	2,590,502	884,470	116,562	815,936	36,957	8,780,863	23,518,304

Table 24—Power Employed in the Mineral Industry in Canada by Industries, 1926, with Comparative Totals for 1925

Industry	Steam engines and turbines	Internal comb- ustion engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Total electric motors	Boilers
METAL MINING—									
Alluvial Gold.... No.	1	2	1	4	.....	4	.....	.....	.....
H.P.	41	9	10	60	.....	60	.....	.....	.....
Auriferous Quartz.... No.	18	48	12	78	889	967	110	999	62
H.P.	1,165	5,645	4,411	11,221	47,036	58,257	4,741	61,777	4,636
Copper-Gold-Silver.... No.	9	10	9	28	358	386	85	443	32
H.P.	1,455	345	10,450	12,250	19,705	31,955	3,326	23,031	2,266
Silver-Cobalt.... No.	13	4	.....	17	207	224	1	208	27
H.P.	665	525	.....	1,190	8,054	9,244	4	8,058	1,600
Silver-Lead-Zinc.... No.	19	35	29	83	110	193	35	145	25
H.P.	1,495	1,381	2,865	5,741	6,905	12,646	605	7,510	2,234
Nickel-Copper.... No.	.....	.....	.....	.....	165	165	.....	165	.....
H.P.	.....	.....	.....	.....	15,345	15,345	.....	15,345	.....
Miscellaneous.... No.	.....	.....	.....	.....	12	12	.....	12	.....
H.P.	.....	.....	.....	.....	123	123	.....	123	.....
Non-Ferrous Smelting and Refining.... No.	27	1	21	49	1,303	1,352	517	1,880	17
H.P.	12,855	53	64,435	77,343	89,017	166,360	19,134	108,161	5,709
Total..... No.	87	100	72	259	3,044	3,303	748	3,792	163
H.P.	17,676	7,958	82,171	107,805	186,185	293,990	27,810	213,995	16,445
NON-METAL MINING IN- CLUDING FUELS—									
FUELS									
Coal..... No.	513	55	2	570	506	1,076	840	1,346	453
H.P.	101,072	376	12,000	113,448	18,424	131,872	50,121	68,545	80,495
Natural Gas.... No.	13	142	.....	155	6	161	21	27	22
H.P.	419	1,147	.....	1,566	96	1,662	230	326	1,270
Petroleum.... No.	43	53	.....	96	62	158	7	69	49
H.P.	1,506	1,271	.....	2,777	555	3,332	12	567	2,562
Total..... No.	569	250	2	821	574	1,395	868	1,442	524
H.P.	102,997	2,794	12,000	117,791	19,075	136,866	50,363	69,488	84,327

Table 24—Power Employed in the Mineral Industry in Canada by Industries, 1926, with Comparative Totals for 1925—Concluded

Industry	Steam engines and turbines	Internal combustion engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Total electric motors	Boilers
<i>OTHER NON-METAL MINING</i>									
Abrasives.....No.	12	1		13	6	19		6	11
H.P.	410	5		415	241	656		241	475
Asbestos.....No.	4	1		5	404	409	5	409	18
H.P.	1,050	6		1,056	27,433	28,489	700	28,133	1,820
Feldspar.....No.	6	5		11		11			12
H.P.	248	95		343		343			433
Graphite.....No.	4	2	3	9		9	10	10	3
H.P.	260	145	300	705		705	399	399	260
Gypsum.....No.	13	40		53	95	148	51	146	21
H.P.	1,700	1,616		3,316	3,601	6,917	831	4,432	2,060
Iron Oxides.....No.		4		4	4	8		4	
H.P.		80		80	117	197		117	
Mica.....No.			1	1	3	4	4	7	4
H.P.			150	150	48	198	125	173	300
Quartz.....No.	11	4		15	7	22	7	14	5
H.P.	607	114		721	213	934	320	533	775
Salt.....No.	30	3		33	54	87		56	26
H.P.	752	62		814	659	1,473	52	711	4,100
Talc and Soap-stone.....No.	3	8		11	13	24		13	4
H.P.	170	58		228	595	823		595	250
Miscellaneous.....No.	4	2		6	25	31	7	32	5
H.P.	305	9		314	1,143	1,457	282	1,425	425
Total.....No.	87	70	4	161	611	772	86	697	109
H.P.	5,502	2,190	450	8,142	34,050	42,192	2,709	26,759	10,898
<i>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</i>									
Cement.....No.	5	11		16	1,122	1,138	44	1,166	8
H.P.	418	283		701	65,800	66,501	1,900	67,700	2,302
Clay Products.....No.	110	38		148	387	515	9	376	120
H.P.	8,365	987		9,352	14,213	23,565	267	14,480	9,349
Lime.....No.	23	7	1	31	143	174	34	177	20
H.P.	1,034	79	30	1,143	2,635	3,778	615	3,250	1,078
Sand and Gravel.....No.	84	33	5	122	78	200	7	85	50
H.P.	5,725	715	239	6,679	2,037	8,716	395	2,432	5,505
Stone.....No.	184	52	11	247	466	713	52	613	97
H.P.	5,311	943	1,125	7,379	15,570	22,949	2,186	17,756	4,706
Total.....No.	406	141	17	564	2,176	2,740	146	2,322	295
H.P.	20,853	3,007	1,394	25,254	100,255	125,509	5,363	105,618	22,940
Grand total 1926...No.	1,149	561	95	1,805	6,405	8,210	1,848	8,253	1,091
H.P.	147,028	15,949	96,015	258,992	339,565	598,557	86,245	425,810	134,610
Grand total 1925...No.	1,156	481	95	1,732	5,556	7,288	1,707	7,263	1,034
H.P.	155,502	11,623	49,439	216,564	296,022	512,586	86,263	382,285	129,253

Table 25—Power Employed in the Mineral Industry in Canada, by Provinces, 1926, with Comparative Totals for 1925

Province	Steam engines and turbines	Internal combustion engines	Hydraulic turbines or water wheels	Total primary power	Electric motors run by purchased power	Total power employed	Electric motors run by primary power in same plant	Total electric motors	Boilers
Nova Scotia.....No.	130	46	2	178	150	328	352	502	170
H.P.	49,061	1,807	215	51,083	3,459	54,542	28,673	32,132	42,182
New Brunswick.....No.	42	29		71	4	75	28	32	44
H.P.	2,819	280		3,099	130	3,229	518	648	2,950
Quebec.....No.	138	51	14	203	1,370	1,573	178	1,648	118
H.P.	5,340	815	51,725	57,880	74,100	131,980	6,154	80,254	6,810
Ontario.....No.	284	263	5	552	2,988	3,540	84	3,072	288
H.P.	18,959	6,627	1,480	27,066	146,379	173,445	1,948	148,327	28,492
Manitoba.....No.	22	7		29	147	176		147	17
H.P.	840	94		934	7,375	8,309		7,375	1,170
Saskatchewan.....No.	36	5		41	1	42	20	21	25
H.P.	2,113	203		2,316	25	2,341	386	411	2,816
Alberta.....No.	318	87		405	514	919	349	863	268
H.P.	35,381	1,650		37,031	21,018	58,049	9,591	30,609	31,364
British Columbia.....No.	178	66	74	318	1,231	1,549	817	2,048	155
H.P.	32,415	4,060	42,595	79,070	87,079	166,149	38,762	125,341	18,637
Yukon.....No.	1	7		8		8	20	20	6
H.P.	100	413		513		513	213	213	189
Canada, 1926.....No.	1,149	561	95	1,805	6,405	8,210	1,848	8,253	1,091
H.P.	147,028	15,949	96,015	258,992	339,565	598,557	86,245	425,810	134,610
Canada, 1925.....No.	1,156	481	95	1,732	5,556	7,288	1,707	7,263	1,034
H.P.	155,502	11,623	49,439	216,564	296,022	512,586	86,263	382,285	129,253

Table 26—Principal Imports into Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926, and 1927

Classification	Imports for consumption during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
IRON AND ITS PRODUCTS—						
Iron ore..... tons	911,586	2,333,107	1,053,593	2,020,285	1,445,504	2,835,159
Pigs, Ingots, Blooms and Billets—						
Pig iron..... tons	27,509	539,538	27,779	516,238	34,569	623,182
Ferrosilicon and ferromanganese... cwt.	158,427	567,970	83,559	413,824	58,217	333,440
Other pigs, ingots, blooms and billets..... \$		649,818		638,050		677,426
Total pigs, ingots, blooms and billets..... \$		1,757,326		1,568,112		1,634,048
Scrap iron or steel..... \$		496,862		671,435		926,361
Castings and Forgings—						
Axles, parts and blanks..... \$		2,073,248		3,513,890		2,638,166
Locomotive and car wheel tires... cwt.	222,034	982,391	144,700	657,639	186,598	822,394
Other castings and forgings..... \$		834,511		920,215		1,304,173
Total castings and forgings..... \$		3,890,150		5,091,744		4,764,733
Rolling Mill Products—						
Band and hoop..... cwt.	1,051,059	4,339,135	1,236,716	4,408,557	1,508,072	5,216,868
Bars and Rails—						
Railway rails..... tons	13,165	505,045	21,197	674,704	27,875	890,692
Other bars and rails..... \$		4,396,413		6,079,273		7,419,031
Plates and Sheets—						
Boiler plate..... cwt.	138,353	359,616	89,176	195,369	189,538	451,407
Canada plates..... cwt.	161,272	718,081	220,080	887,225	188,990	770,871
Tinned plates..... cwt.	1,204,993	6,494,839	1,602,038	8,200,879	1,432,558	7,631,628
Plates not less than 30 in. by ½ in. n.o.p..... cwt.	565,821	1,152,628	799,273	1,485,454	1,083,996	2,100,039
Sheets, No. 14 gauge and thinner, n.o.p..... cwt.	715,502	2,969,630	1,026,687	3,852,778	1,234,433	4,479,610
Galvanized..... cwt.	580,838	2,776,323	595,841	2,598,562	546,759	2,358,816
Skelp, for pipe, etc..... cwt.	1,807,792	3,709,243	1,944,013	3,880,180	2,232,369	4,515,179
Other plates and sheets..... cwt.	436,441	1,126,920	642,491	1,540,250	792,280	1,777,889

Table 26—Principal Imports into Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927—Continued

Classification	Imports for consumption during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>IRON AND ITS PRODUCTS—Continued</b>		\$		\$		\$
Rolling Mill Products—Con.						
Rods..... cwt.	450,094	846,940	800,518	1,243,823	955,824	1,409,732
Flat eye-bar blanks..... \$		85,559		19,523		131,856
Bridges..... \$		232,048		78,492		72,723
Other structural iron..... cwt.	2,326,417	4,944,138	2,819,649	5,436,423	3,738,540	7,466,721
Total rolling mill products..... \$		34,656,558		40,581,492		46,693,062
Tubes, Pipes and Fittings—						
Boiler tubes..... \$		684,725		893,993		934,630
Cast iron pipe..... cwt.	146,055	305,996	243,819	491,335	105,616	247,948
Seamless tubing, not less than 3½ c. per lb..... cwt.	39,679	279,182	70,064	488,459	57,854	390,368
Other tubes, pipes, etc..... \$		1,154,472		1,608,319		2,268,962
Wire—						
Barbed fencing..... cwt.	104,916	369,121	76,035	253,617	136,140	476,982
Galvanized, No. 9, 12, and 13 gauge, not telegraph or telephone cwt.	133,556	389,831	220,153	577,275	242,379	613,240
Steel wire for rope..... cwt.	55,553	399,223	74,778	548,360	92,594	577,375
Wire rope, twisted wire, clothes lines, wire cable, etc., n.o.p..... \$		328,506		257,848		317,880
Other wire..... \$		1,065,642		1,152,931		1,175,372
Chains..... \$		633,778		725,593		986,740
Engines and Boilers—						
Engines, automobile..... No.	30,732	4,313,598	76,639	9,245,218	90,050	10,609,398
Engines, other internal combustion No.	5,802	957,298	9,515	1,536,497	14,428	1,565,449
Locomotives and parts..... No.	48	651,166	65	587,711	55	606,098
Other boilers, engines, etc..... \$		1,419,279		1,492,166		2,141,242
Total engines and boilers..... \$		7,341,341		12,861,592		14,922,187
Farm Implements and Machinery—						
Cream separators..... No.	10,998	408,787	18,055	742,794	23,658	997,548
Other dairy machinery..... \$		37,606		67,557		109,427
Harvesters..... No.	1,091	216,427	2,161	389,998	3,949	998,771
Other harvesting implements and machinery..... \$		123,465		176,162		408,662
Planting and Tillage—						
Drills and parts..... No.	1,286	93,415	3,769	346,004	6,048	836,374
Ploughs and parts..... \$		613,998		1,123,687		1,649,303
Other planting..... \$		136,000		384,571		647,613
Seed Separation—						
Threshing machine separators... No.	1,236	1,008,837	2,281	1,930,539	2,897	2,482,574
Threshing machine separator parts..... \$		472,380		514,776		705,806
Fanning mills..... \$		45,866		51,448		63,278
Traction engines for farm purposes, not over \$1,400 each..... No.	2,078	1,324,347	6,762	4,991,673	9,101	6,847,239
Other farm tractors, parts and repairs..... \$		915,005		1,280,297		1,710,381
Other farm implements..... \$		1,098,853		1,337,144		1,489,312
Total farm implements and machinery..... \$		6,494,986		13,336,650		18,946,288
Hardware and Cutlery—						
Cutlery..... \$		1,351,547		1,428,084		1,587,426
Hardware—						
Nails, wire..... cwt.	6,095	31,171	31,228	98,719	36,166	114,235
Other nails, spikes, tacks..... \$		46,462		48,593		37,991
Needles and pins..... \$		325,417		353,901		411,655
Nuts and bolts..... cwt.	22,493	251,329	29,705	324,191	33,509	347,385
Screws..... \$		118,579		114,041		116,972
Other hardware..... \$		1,000,809		1,114,227		1,259,072
Total hardware and cutlery..... \$		3,125,314		3,481,756		3,874,736
Machinery (except Agricultural)—						
Sewing machines..... No.	6,658	252,901	8,517	332,752	17,121	555,052
Sewing machine parts and attachments..... \$		584,469		722,642		430,176
Washing machines, domestic..... No.	10,910	643,050	13,297	792,131	15,492	1,070,193
Other household machinery..... \$		163,264		131,310		146,724
Rock drills..... No.	683	559,592	1,182	441,809	1,478	491,271
Other mining and metallurgical.... \$		1,004,565		1,811,888		2,900,654
Office or Business—						
Adding..... No.	3,607	518,010	3,790	520,044	4,191	670,770
Typewriting..... No.	8,753	487,687	11,411	686,030	14,103	807,063
Other..... \$		439,626		516,288		599,122

Table 26—Principal Imports into Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927—Continued

Classification	Imports for consumption during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>IRON AND ITS PRODUCTS—Concluded</b>		\$		\$		\$
Printing and Bookbinding—						
Printing presses.....	\$	1,462,758		1,307,922		1,596,174
Typesetting machines.....	\$	660,788		487,998		672,041
Other printing and bookbinding.....	\$	470,828		608,295		626,281
Coke and gas machinery.....	\$	510,144		261,328		242,433
Cranes and derricks.....	No. 131	581,695	190	605,586	176	594,958
Logging equipment.....	\$	813,489		980,291		1,112,988
Metal-working, n.o.p.....	\$	1,154,075		2,021,897		2,279,377
Paper and pulp mill.....	\$	922,255		2,534,693		4,466,465
Pumps, power, and parts.....	No. 4,348	656,482	6,206	937,999	7,468	967,553
Rolling mill machines.....	\$	153,362		159,534		239,507
Shovels, steam and electric.....	No. 28	309,833	55	480,194	51	562,005
Textile.....	\$	2,865,276		3,383,649		3,855,639
Other machinery.....	\$	10,617,066		12,257,389		16,195,228
Total machinery (except agricultural).....	\$	25,822,215		32,031,669		41,081,674
Springs.....	\$	166,787		196,527		190,009
Stamped and Coated Products—						
Tin cans.....	\$	579,786		673,910		679,371
Other.....	\$	1,016,158		1,157,614		1,413,612
Tools and hand implements.....	\$	1,645,117		2,053,815		2,409,152
Vehicles—						
Automobiles, freight.....	No. 934	1,364,664	1,189	1,772,414	2,548	3,200,626
Automobiles, passenger.....	No. 8,835	8,726,714	14,935	14,022,814	29,022	23,882,455
Automobile parts.....	\$	14,188,715		23,111,109		30,336,461
Railway cars, all kinds.....	No. 858	394,811	462	338,813	637	743,093
Railway cars, parts of.....	\$	664,015		626,508		1,008,006
Other vehicles of iron.....	\$	430,642		460,710		703,550
Total vehicles.....	\$	25,769,561		40,330,368		59,874,191
Drums, tanks, cylinders.....	\$	525,512		684,312		876,508
Furniture.....	\$	432,793		507,999		592,188
Plates for agricultural implements.....	cwt. 22,248	116,740	79,752	410,343	61,532	314,889
Pumps, hand.....	No. 17,185	240,521	27,554	553,703	37,162	607,452
Stoves.....	\$	328,236		376,652		497,401
Valves.....	\$	472,082		637,465		714,437
Articles for ship-building.....	\$	902,043		1,440,020		1,456,093
Other iron and steel.....	\$	10,960,770		13,501,607		16,136,437
<b>Total iron and its products.....</b>	<b>\$</b>	<b>134,684,441</b>		<b>181,196,800</b>		<b>229,429,485</b>
<b>NON-FERROUS METALS—</b>						
Aluminium and cryolite.....	cwt. 1,358,148	2,568,617	1,336,538	2,675,361	1,647,244	4,108,462
Aluminium ingots, sheets.....	lb. 587,687	171,612	714,352	225,350	1,084,178	293,468
Other aluminium.....	\$	1,015,459		1,134,351		1,171,225
Brass—						
Scrap.....	cwt. 32,889	299,017	33,092	323,666	31,047	297,148
Bars and rods.....	cwt. 6,431	103,221	8,492	163,436	9,902	174,493
Strips, sheets and plates.....	cwt. 7,176	142,631	10,370	171,674	13,722	253,834
Tubing.....	lb. 1,644,252	388,937	2,045,176	506,338	2,933,727	699,912
Wire, plain.....	lb. 362,089	84,153	453,543	109,763	474,696	125,287
Wire cloth.....	\$	127,558		141,035		89,656
Other.....	\$	2,389,388		2,959,993		3,355,651
Total brass.....	\$	3,534,915		4,375,905		4,995,981
Copper—						
Blocks, pigs, ingots.....	lb. 8,716,301	1,185,658	8,621,899	1,227,315	8,039,758	1,137,701
Scrap.....	cwt. 21,084	282,159	39,648	540,667	47,155	623,031
Bars and rods.....	cwt. 201,033	2,857,614	254,817	3,747,343	195,622	2,981,677
Strips, sheets and plates.....	cwt. 22,278	441,593	16,421	352,479	20,361	429,869
Tubing.....	lb. 1,496,049	355,242	1,815,086	448,432	2,587,584	579,539
Other.....	\$	841,023		1,098,836		1,319,736
Total copper.....	\$	5,963,289		7,415,072		7,071,553
Lead—						
Pig.....	lb. 508,706	44,512	485,302	50,303	751,381	65,191
Other.....	\$	283,669		266,138		311,944
Nickel—						
Bars, rods, sheets, etc.....	lb. 575,983	113,452	895,310	170,143	1,110,429	250,763
Nickel-plated ware.....	\$	1,271,328		1,411,766		1,619,179
Other.....	\$	258,871		302,375		341,005

Table 26—Principal Imports into Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927—Continued

Classification	Imports for consumption during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>NON-FERROUS METALS—Continued.</b>		\$		\$		\$
Precious Metals—						
Electro-plated ware.....	\$	635,784		714,172		880,532
Silver in bars, blocks, etc.....	\$	741,097		1,080,846		972,406
Other.....	\$	624,277		791,029		745,604
Tin—						
Blocks, bars and pigs.....	cwt. 43,535	2,200,779	44,409	2,577,974	50,858	3,258,515
Foil.....	lb. 1,021,686	345,539	527,094	231,836	296,736	148,292
Other (collapsible tubes).....	\$	15,298		35,262		49,152
Zinc—						
Spelter.....	lb. 860,586	57,825	1,393,475	111,994	1,312,169	96,275
Sheets and plates.....	lb. 2,957,024	263,457	4,744,878	457,462	5,704,810	564,272
Other.....	\$	204,310		217,089		204,856
Phosphor tin and bronze.....	lb. 389,046	149,949	635,210	272,720	665,226	267,222
Other alloys, n.o.p.....	\$	36,589		48,663		68,354
Clocks and watches.....	\$	2,451,425		2,344,721		3,141,254
Electric Apparatus—						
Batteries, storage.....	No. 22,546	923,701	26,811	1,042,152	40,287	716,553
Dynamos, generators.....	\$	978,170		1,055,050		1,178,380
Incandescent lamps—						
Carbon filament.....	No. 1,072,355	85,897	911,427	66,385	1,496,694	77,462
Metal filament.....	No. 2,253,321	301,009	3,553,966	418,521	2,881,548	270,719
Electric light fixtures.....	\$	546,357		585,758		709,417
Meters.....	\$	209,795		280,580		398,283
Motors.....	\$	1,815,710		2,239,020		2,403,668
Spark plugs, etc.....	\$	440,785		680,657		659,226
Switches, etc.....	\$	948,740		1,145,370		1,274,710
Telegraph instruments.....	\$	154,804		104,537		230,261
Telephone instruments.....	\$	303,281		501,699		872,334
Wireless apparatus.....	\$	2,499,687		3,463,501		2,712,614
Other.....	\$	5,080,935		4,432,773		5,428,566
Total electric apparatus, n.o.p....	\$	14,288,871		16,016,003		16,932,193
Gas apparatus.....	\$	171,639		177,137		172,500
Printing materials (except machinery)—						
Stereotypes.....	Sq. in. 4,039,819	198,882	4,325,646	229,153	2,323,438	300,024
Other.....	\$	90,002		100,299		120,473
Manganese oxide.....	cwt. 442,586	427,695	1,146,489	1,171,433	767,539	776,579
Ores, n.o.p.....	\$	330,261		303,300		484,659
Antimony, not ground.....	lb. 768,894	74,624	1,089,879	181,886	1,268,712	162,530
Mercury.....	lb. 95,504	67,543	155,575	130,401	114,450	105,138
Lamps, sidelights, etc.....	\$	720,445		751,447		956,763
Other non-ferrous metals.....	\$	1,789,535		1,721,394		2,111,478
Total non-ferrous metals.....	\$	41,111,550		47,692,985		52,747,842
<b>NON-METALLIC MINERALS—</b>						
Asbestos other than crude.....	\$	465,400		468,362		622,793
Clay and Clay Products—						
China clay.....	cwt. 416,495	261,958	354,410	178,139	387,676	223,802
Fire clay.....	cwt. 817,784	163,174	876,324	178,524	958,441	195,994
Other clays.....	\$	60,846		69,974		86,604
Bricks, fire.....	\$	1,366,799		1,481,315		1,547,617
Bricks, building.....	M 4,915	110,120	5,484	120,571	4,293	100,585
Brick and tile, n.o.p.....	\$	503,830		520,992		650,043
Pottery and chinaware.....	\$	3,847,793		4,218,973		4,508,513
Artificial teeth.....	\$	310,154		376,427		378,742
Bath tubs, etc.....	\$	351,166		365,060		409,723
Other.....	\$	114,569		85,775		488,433
Total clay and clay products....	\$	7,090,409		7,595,750		8,590,056
Coal and Coal Products—						
Coal, anthracite.....	tons 4,133,675	36,838,730	3,262,631	27,256,806	4,376,126	35,091,257
Coal, bituminous.....	tons 11,510,053	25,750,817	13,377,204	28,781,771	13,079,418	26,980,950
Coal tar, crude.....	gal. 2,304,998	159,935	3,751,867	268,215	3,441,983	241,787
Carbolic oil.....	gal. 3,813,692	690,991	4,817,333	718,465	4,320,054	707,158
Coke.....	tons 578,843	3,506,717	939,246	6,505,072	889,392	5,537,604
Lignite and coal products, n.o.p....	\$	161,673		123,861		77,871
Total coal and coal products....	\$	67,108,863		63,654,190		68,636,627
Glass and Glassware—						
Carboys, bottles, jars, etc. (in-						
cluding milk bottles).....	\$	1,212,585		1,096,294		1,389,207
Tableware.....	\$	644,537		706,754		868,395
Common window glass.....	sq. ft. 23,559,813	1,030,803	38,694,185	1,334,068	40,275,041	1,187,776

Table 26—Principal Imports into Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927—Continued

Classification	Imports for Consumption during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>NON-METALLIC MINERALS—Concluded</b>		\$		\$		\$
Plate glass—						
Not over 7 sq. ft. .... sq. ft.	2,052,604	919,091	2,623,386	1,060,376	4,021,948	1,612,885
7 to 25 sq. ft. .... sq. ft.	537,479	288,790	519,892	271,509	730,476	359,916
Other, not bevelled .... sq. ft.	800,881	471,748	889,578	479,135	1,065,336	566,756
Incandescent lamp bulbs and tubing for .... \$		343,670		441,669		552,500
Other glass and glassware .... \$		1,749,924		1,908,224		2,101,144
Total glass and glassware .... \$		6,661,148		7,298,029		8,638,579
Graphite and products .... \$		90,573		151,711		123,705
Petroleum, Asphalt and Their Products—						
Asphalt, solid .... cwt.	330,230	283,796	247,031	292,162	440,193	450,865
Other asphalt and oil .... \$		49,494		24,485		42,403
Crude Petroleum—						
For refining .... gal.	440,671,846	19,834,683	470,616,511	25,675,071	605,224,341	32,818,370
Other, -8235 and heavier .... gal.	96,919,195	4,401,779	98,023,025	4,311,824	88,362,466	3,619,979
Coal and kerosene oil, refined .... gal.	5,474,153	447,131	5,019,355	453,579	4,991,423	557,711
Gasoline—						
Under .725 specific gravity .... gal.	58,291,880	7,386,396	58,606,255	8,409,686	63,833,449	9,135,629
Other .... gal.	19,352,161	2,383,149	24,405,812	3,226,750	23,716,772	3,337,735
Lubricating oil .... gal.	7,929,463	2,323,998	8,782,802	2,556,960	10,823,082	3,150,169
Other oils .... \$		276,756		264,644		187,822
Other petroleum products .... \$		718,296		844,649		1,157,110
Total petroleum, asphalt and their products .... \$		38,105,478		46,059,810		54,457,793
Stone and Its Products—						
Abrasives .... \$		1,562,934		2,323,044		2,909,967
Building and paving stone .... \$		402,598		426,991		497,656
Cement .... cwt.	95,225	64,323	95,051	71,826	62,725	81,715
Silica sand .... cwt.	2,604,271	334,665	2,783,111	350,471	3,178,640	381,408
Whiting .... cwt.	291,648	176,877	351,281	207,924	349,581	212,347
Marble, slate and other .... \$		1,412,118		1,527,228		1,882,800
Total stone and its products .... \$		3,953,515		4,907,484		5,965,893
Miscellaneous—						
Carbons, electric .... \$		811,387		885,358		1,271,090
Diamonds, unset .... \$		2,168,525		3,212,565		2,799,520
Insulators, electric .... \$		589,895		496,531		276,486
Salt .... cwt.	3,595,991	1,097,548	4,029,515	1,091,937	3,624,733	1,025,722
Sulphur .... cwt.	2,816,133	1,855,085	2,916,832	2,026,807	3,726,983	3,004,540
Other non-metallic minerals .... \$		1,015,465		1,185,406		1,371,903
<b>Total non-metallic minerals... \$</b>		<b>131,013,294</b>		<b>139,033,949</b>		<b>156,784,707</b>
<b>CHEMICALS AND ALLIED PRODUCTS—</b>						
Acid, citric .... lb.	250,023	78,684	350,060	102,191	245,955	71,493
Acid, stearic .... lb.	425,500	53,593	790,228	113,882	1,032,396	121,170
Other acids .... \$		349,605		394,479		425,814
Alcohols, industrial .... gal.	13,581	47,985	8,035	29,310	5,719	19,631
Cellulose products .... \$		1,158,595		1,939,280		2,335,385
Drugs and medicinal preparations... \$		2,617,241		2,992,150		3,108,199
Dyeing and Tanning Materials—						
Coal tar dyes .... lb.	2,629,090	1,548,015	2,919,794	1,632,348	3,547,620	1,954,852
Logwood, oak, quebracho extracts lb.	47,198,719	1,621,708	36,368,992	1,310,744	37,527,470	1,387,735
Other dyeing and tanning articles. \$		351,304		393,841		396,365
Total dyeing and tanning materials .... \$		3,521,027		3,336,933		3,738,952
Explosives .... \$		336,510		364,071		469,893
Fertilizers, n.o.p.—						
Potash, muriate of .... cwt.	194,741	289,268	277,791	402,774	314,866	472,071
Soda nitrate .... cwt.	428,115	1,051,697	584,469	1,462,422	454,264	1,115,608
Superphosphates .... cwt.	914,736	464,372	1,387,069	819,792	1,529,810	927,176
Other .... \$		582,633		734,634		977,593
Total fertilizers, n.o.p. .... \$		2,387,970		3,419,624		3,492,448

Table 26—Principal Imports into Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927—Concluded

Classification	Imports for consumption during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>CHEMICALS AND ALLIED PRODUCTS—</b>						
— <i>Concluded</i>						
Paints, Pigments and Varnishes—						
Black, carbon..... lb.	3,783,755	248,863	5,964,211	386,958	6,885,744	497,225
Lithopone..... lb.	8,010,959	333,919	10,743,020	454,309	13,768,543	572,283
Oxides..... lb.	4,809,099	394,000	5,385,315	478,174	6,357,798	598,177
Zinc white..... lb.	13,802,512	927,702	12,942,562	909,169	14,011,246	982,119
Liquid fillers, etc..... lb.	2,820,620	486,047	3,338,700	600,289	3,065,069	511,686
Varnish, lacquers, etc..... gal.	98,265	201,792	116,660	256,581	131,953	281,479
Other paints, etc..... \$		708,188		912,132		1,164,442
Total paints, etc..... \$		3,300,511		3,997,612		4,607,411
Perfumery, Cosmetics—						
Perfumes over 4 oz..... gal.	4,270	91,706	4,432	96,761	4,493	103,231
Other..... \$		919,638		932,417		1,000,422
Soaps—						
Common laundry..... lb.	10,281,099	747,410	8,685,751	627,813	9,812,480	695,013
Other..... \$		425,711		440,254		509,609
Inorganic Chemicals, n.o.p.—						
Sulphate of alumina..... lb.	29,962,478	354,490	34,615,069	417,565	42,802,608	488,935
Ammonia, nitrate of..... lb.	2,939,608	149,853	3,948,301	213,813	4,848,747	210,600
Copper sulphate..... lb.	3,277,716	161,440	3,120,575	151,610	3,610,585	170,648
Chlorine, liquid..... lb.	7,276,067	261,007	6,547,067	230,203	12,645,170	394,191
Chloride of lime..... lb.	16,030,574	272,183	13,620,570	256,303	17,714,397	294,084
Potash compounds..... lb.	4,200,964	408,942	4,583,610	439,664	5,760,298	529,882
Soda compounds..... lb.	193,776,648	2,496,114	210,055,396	2,683,443	215,575,523	3,163,121
Acid phosphate..... lb.	3,685,917	224,317	3,507,918	212,018	4,003,723	261,522
Other..... \$		685,859		855,811		860,516
Total inorganic chemicals, n.o.p. \$		5,014,205		5,460,430		6,373,499
Other Drugs, Dyes and Chemicals—						
Glycerine..... lb.	3,483,655	560,765	4,505,978	719,661	4,041,102	866,361
Other chemicals and allied products..... \$		3,149,078		3,437,408		3,906,184
Total chemicals and allied products..... \$		24,760,237		28,404,276		31,844,715

Table 27—Principal Exports from Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927

Classification	Exports of Canadian merchandise during the years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
IRON AND ITS PRODUCTS—						
Ore, including chromite..... tons	5,836	26,191	3,562	16,622	734	7,061
Pigs, Ingots, Blooms and Billets—						
Pig iron..... tons	12,817	248,768	4,274	82,269	2,197	45,264
Billets, ingots and blooms..... tons	1,622	54,208	960	26,053	1,254	31,092
Ferromanganese and ferrosilicon..... tons	26,449	1,015,382	30,820	2,058,850	59,437	3,351,423
Total pigs, ingots, blooms and billets..... \$		1,318,358		2,167,172		3,427,779
Scrap iron..... tons	65,320	763,455	66,313	743,653	68,395	667,583
Castings..... \$		191,345		146,668		144,119
Forgings..... \$		14,831		143,286		64,646
Rolling Mill Products—						
Bars and rods..... tons	8,140	416,350	16,526	703,154	28,053	1,054,980
Rails..... tons	6,814	188,637	4,583	114,076	13,712	513,434
Plates and sheets..... tons	129	12,790	103	8,891	214	17,205
Structural steel..... tons	2,069	206,032	10,931	799,699	9,743	745,550
Total rolling mill products..... \$		823,809		1,625,820		2,331,169
Pipe and tubing..... \$		1,208,061		1,482,333		2,064,401
Wire—						
Barbed..... cwt.	35,391	132,067	25,365	94,000	24,774	83,299
Woven fencing..... \$		172,619		169,329		162,754
Other..... \$		850,060		675,892		648,544
Engines and Boilers—						
Locomotive and parts..... No.	1	21,021		13,633	2	66,041
Other..... \$		81,713		287,938		238,297
Farm Implements and Machinery—						
Cream separators..... \$		108,698		101,685		100,092
Harvesters..... No.	6,617	1,220,186	12,305	2,043,445	17,285	2,939,985
Mowers..... No.	14,864	957,695	27,307	1,704,969	26,763	1,566,584
Reapers..... No.	1,161	105,893	2,505	241,526	1,488	143,705
Cultivators..... No.	9,213	579,085	10,128	449,737	13,963	823,732
Drills..... No.	4,903	749,938	6,413	968,391	6,423	1,019,701
Harrows..... \$		285,757		366,326		313,283
Ploughs..... \$		1,630,908		2,858,266		2,226,255
Threshing machines..... \$		2,606,584		1,572,477		4,283,799
Spades and shovels..... \$		230,189		212,062		232,591
Other..... \$		1,074,720		831,863		774,293
Parts..... \$		1,793,059		2,277,594		2,988,927
Total farm implements and machinery..... \$		11,342,712		13,628,341		17,412,947
Hardware and Cutlery—						
Razors..... \$		1,267,676		1,704,529		2,326,610
Nails, wire..... cwt.	61,217	246,803	71,486	263,498	75,914	267,485
Nails, other..... cwt.	26,948	156,188	35,910	210,543	24,723	156,400
Needles and pins..... \$		174,301		231,362		273,059
Nuts and bolts..... cwt.	12,480	80,387	17,017	104,994	15,442	92,252
Other hardware..... \$		225,120		245,712		264,956
Machinery—						
Electric vacuum cleaners..... No.	27,916	1,014,429	26,668	1,005,713	28,892	1,228,326
Sewing machines..... \$		2,149,436		3,021,741		1,997,011
Adding machines..... No.	1,369	278,257	747	201,914	1,981	280,960
Typewriters..... No.	814	100,416	71	5,258	380	15,008
Metal-working..... \$		168,256		310,721		235,513
Wood-working..... \$		73,475		70,046		93,952
Other machinery..... \$		1,259,318		1,054,521		905,155
Total machinery..... \$		5,043,587		5,669,914		4,755,925
Tools, hand or machine..... \$		303,588		299,438		264,467
Vehicles—						
Automobiles, freight—						
One ton or less..... No.	11,760	3,981,840	19,210	6,258,464	20,405	6,870,927
Over one ton..... No.	13	36,579	14	24,616	6	14,786
Automobiles, passenger—						
\$500 or less..... No.	32,184	11,212,913	48,264	16,953,925	38,019	13,283,406
\$500 to \$1,000..... No.	8,865	6,665,314	9,155	7,146,151	9,963	7,475,481
Over \$1,000..... No.	3,268	4,133,743	4,080	5,334,282	3,322	4,106,652

Table 27—Principal Exports from Canada of Mineral Products during the Fiscal Years Ending March 31, 1925, 1926 and 1927—Continued

Classification	Exports of Canadian merchandise during the years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>IRON AND ITS PRODUCTS—Concluded</b>		\$		\$		\$
Vehicles—Concluded						
Automobile parts.....	\$	4,911,736		7,121,747		4,665,369
Railway cars and parts.....	No. 40	161,311	17	109,265	2	82,333
Tractors and parts.....	No. 10	182,915	8	85,629	7	122,678
Other vehicles of iron.....	\$	115,488		145,946		194,813
Total vehicles.....	\$	31,401,839		43,180,025		36,816,445
Chains.....	\$	120,402		115,149		151,842
Stoves.....	\$	128,775		123,089		141,619
Other iron and steel.....	\$	1,311,032		1,392,137		1,455,124
<b>Total iron and its products...</b>	<b>\$</b>	<b>57,405,940</b>		<b>74,735,077</b>		<b>74,284,824</b>
<b>NON-FERROUS METALS—</b>						
Aluminium—						
Scrap.....	cwt.				6,082	85,225
Bars, blocks, etc.....	cwt.	226,530	5,135,366	245,683	6,006,390	5,347,969
Manufactures.....	\$		775,181		670,950	1,150,025
Brass—						
Old and scrap.....	cwt.	83,132	650,609	80,488	677,440	540,505
Valves.....	\$		198,366		128,912	203,348
Other.....	\$		58,174		162,728	124,840
Copper—						
Fine, in ore, matte, regulus.....	cwt.	533,740	5,847,848	610,906	7,037,206	668,607
Blisters.....	cwt.	436,616	5,621,645	515,500	6,908,431	468,606
Old and scrap.....	cwt.	42,755	492,186	45,045	506,702	54,460
Wire, insulated.....	\$		584,033		380,346	387,573
Other.....	\$		176,955		110,368	135,311
Total copper.....	\$		12,722,677		14,943,053	14,917,456
Lead—						
In ore.....	cwt.	378,772	2,455,430	122,417	635,852	136,458
Pig.....	cwt.	1,148,329	7,911,700	1,856,175	13,292,720	2,115,627
Nickel—						
In ore.....	cwt.	385,443	5,670,848	403,528	6,553,113	365,689
Fine.....	cwt.	230,054	4,503,397	307,286	6,276,131	258,758
Precious Metals—						
Gold-bearing quartz, dust, etc.....	\$		28,793,333		25,968,094	
Silver in ore, concentrates, etc.....	oz.	4,909,072	3,112,591	4,261,282	2,674,483	6,034,514
Silver bullion.....	oz.	13,675,661	9,234,991	14,121,133	9,691,093	15,778,443
Other.....	\$		395,821		470,749	
Total precious metals.....	\$		41,536,736		38,804,419	20,211,170
Zinc—						
Ore.....	tons	80,930	2,444,056	30,992	956,480	41,920
Spelter.....	cwt.	439,674	2,900,004	627,595	4,876,525	984,827
Scrap, dross and ashes.....	cwt.					43,576
Miscellaneous—						
Electric apparatus.....	\$		1,581,511		1,405,490	
Cobalt ore.....	tons					479
Cobalt, metallic.....	lb.	154,508	342,966	290,738	660,958	202,320
Ores, n.o.p.....	tons	2,385	735,978	868	361,639	371
Other non-ferrous metals.....	\$		746,789		1,063,470	
<b>Total non-ferrous metals.....</b>	<b>\$</b>		<b>90,370,788</b>		<b>97,476,270</b>	<b>80,639,197</b>
<b>NON-METALLIC MINERALS—</b>						
Asbestos.....	tons	108,245	6,413,405	139,123	8,180,988	138,732
Asbestos sand.....	tons	104,693	1,329,334	130,529	1,739,912	127,214
Asbestos manufactures.....	\$		47,349		53,504	
Porcelain insulators.....	\$		347,051		89,197	
Other clay and products.....	\$		177,471		117,003	
Coal (including lignite).....	tons	719,502	4,388,766	753,842	4,083,713	1,288,511
Coal Products—						
Cinders.....	tons		11,750		14,703	
Coke.....	tons	25,967	438,433	44,540	630,264	88,336
Tar.....	gal.	2,993,029	243,465	1,730,647	119,491	4,316,758

Table 27—Principal Exports from Canada of Mineral Products during the Fiscal years Ending March 31, 1925, 1926 and 1927—Concluded

Classification	Exports of Canadian merchandise during years ending March 31:					
	1925		1926		1927	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>NON-METALLIC MINERALS—Concluded</b>						
Glass and glassware.....	\$	292,066		309,897		206,180
Graphite.....	\$	72,603		157,134		152,598
Mica splittings.....	cwt.	4,952	5,755	403,157	5,389	362,271
Other mica.....	\$	89,432		79,245		79,143
<b>Petroleum and Its Products—</b>						
Petroleum, crude.....	gal.	21,836,577	6,651,098	314,864	25,674,282	1,135,422
Kerosene, refined.....	gal.	1,569,932	1,481,708	157,247	1,518,820	191,744
Gasoline and naphtha.....	gal.	1,438,786	2,383,082	520,505	3,278,689	629,751
Other oil.....	gal.	717,123	1,550,337	299,970	725,197	156,714
Wax.....	cwt.	30,479	10,280	59,839	11,481	67,871
<b>Stone and its Products—</b>						
Abrasives, artificial.....	\$	2,645,140		2,986,376		2,720,872
Grindstones.....	\$	53,620		60,637		84,996
Cement, portland.....	cwt.	519,328	3,491,875	1,498,353	1,022,819	370,935
Gypsum, crude.....	tons	461,016	547,491	882,341	663,747	1,064,205
Lime.....	cwt.	358,391	336,036	322,659	378,529	341,660
Feldspar.....	tons	35,479	31,906	238,197	30,885	232,860
Sand and gravel.....	tons	1,035,079	868,639	202,094	907,084	276,864
Talc, refined.....	cwt.	175,436	216,157	126,984	212,632	124,650
Other.....	\$	261,213		290,176		329,541
Other non-metallic minerals.....	\$	294,491		627,392		509,399
<b>Total non-metallic minerals....</b>	<b>\$</b>	<b>20,728,956</b>		<b>24,568,845</b>		<b>28,509,838</b>
<b>CHEMICALS AND ALLIED PRODUCTS—</b>						
Acid, sulphuric.....	cwt.	137,277	486,485	300,926	475,856	267,338
Acids, other.....	cwt.	184,969	1,969,517	1,887,546	252,449	2,372,263
Wood alcohol.....	gal.	171,585	101,213	91,499	34,197	32,488
Other industrial spirits.....	\$	437		200,720		15,502
Drugs, medicinal.....	\$	526,024		501,923		627,061
Dyeing and tanning materials.....	\$	1,213		2,457		1,342
Explosives.....	\$	280,547		155,688		121,250
<b>Fertilizers—</b>						
Ammonium sulphate.....	cwt.	216,941	338,844	877,691	326,958	766,688
Cyanamid.....	cwt.	1,488,309	1,842,543	4,419,110	1,709,638	3,821,507
Other manufactured, n.o.p.....	cwt.	186,465	48,272	102,287	22,982	24,864
Paints, pigments and varnishes.....	\$	473,159		491,184		499,691
Soap, toilet.....	lb.	3,875,095	3,711,640	572,589	4,087,906	750,953
Soaps, n.o.p.....	lb.	440,665	355,668	33,066	479,965	41,375
<b>Inorganic Chemicals, n.o.p.—</b>						
Arsenic, n.o.p.....	cwt.	26,431	17,640	72,367	38,091	127,241
Acetate of lime.....	cwt.	60,233	50,323	117,871	59,776	181,525
Calcium carbide.....	cwt.	310,682	403,336	1,566,407	408,833	1,507,963
Soda and sodium compounds.....	cwt.	533,689	567,714	3,682,103	608,323	3,601,048
Cobalt oxide and salts.....	lb.	600,509	554,844	991,921	261,073	447,228
Other.....	\$	119,654		105,022		110,521
<b>Total inorganic chemicals, n.o.p....</b>	<b>\$</b>	<b>6,429,508</b>		<b>6,535,691</b>		<b>5,975,526</b>
Creosote oil.....	gal.	993,758	839,995	143,739	2,234,125	370,993
Glycerine.....	cwt.	9,393	8,395	109,674	7,218	127,807
Other drugs, dyes and chemicals.....	\$	1,213,057		1,072,338		758,105
<b>Total chemicals and allied products....</b>	<b>\$</b>	<b>16,209,820</b>		<b>17,498,128</b>		<b>16,574,753</b>

**Table 28—Canada's Foreign Trade in Mineral Products, Showing the Values by Countries, of Imports into Canada for Consumption and Exports of Canadian Merchandise, of the Principal Classes of Mineral Products, during the Fiscal Year Ending March 31, 1927.**

Country	Iron and its products		Non-ferrous metals and their products		Non-metallic minerals and their products (except chemicals)		Chemicals and allied products	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
	\$	\$	\$	\$	\$	\$	\$	\$
<b>BRITISH EMPIRE</b>								
United Kingdom.....	15,008,951	8,129,365	5,642,570	14,174,289	9,253,721	2,324,119	4,906,256	3,567,256
Irish Free State.....		39,699	126	5,321	157	1,158,052	729	7,917
Aden.....		25,815		162				
<b>Africa—</b>								
British East.....		504,306		4,687				540
British South.....	81	2,858,749		163,966	13,624	123,741		29,980
British West—								
Gambia.....		10,884						
Gold Coast.....		178,618		249				3,138
Nigeria.....		190,054		279				
Sierra Leone.....		23,038				19,863		
Other Br. W. Africa.....		23,695	21					1,424
Bermuda.....	445	22,490	650	3,471	20	19,487		17,821
<b>Br. East Indies—</b>								
British India.....	205	4,922,334	5,035	3,028,166	39,180	8,295	8,333	59,173
Ceylon.....		456,411		11,682	498			3,691
Straits Settlements.....		1,498,424	523,510	43,406		6,940	1,685	7,676
Other Br. East Indies.....				210	22,674		1,742	
British Guiana.....	21,974	114,101	9,172	5,676		72,982	17	100,536
British Honduras.....	9,340	25,350	325	1,169		6,265		6,426
British Sudan.....		18,202		2,355				
<b>Br. West Indies—</b>								
Barbados.....	28,375	79,899		4,801		17,301	7	97,860
Jamaica.....	16,588	281,189	343	2,718	6	47,583	6,616	56,876
Trinidad and Tobago.....	21,595	212,298		11,705		22,063		64,372
Other Br. West Indies.....	5,812	89,468		3,597	78,778	22,980	933	34,042
Gibraltar.....		3,847				11,442		
Hong Kong.....	1,141	22,224	2,401	253,665	7,301	75	80,531	10,261
Iraq (Mesopotamia).....		148,740		742		29		4
Malta.....		76,359						
Newfoundland.....	483,798	887,472	3,038	173,329	77,804	2,189,019	173	434,688
<b>Oceania—</b>								
Australia.....	354	9,116,469	393	278,972	755	287,210	1,792	205,377
Fiji.....		93,080		2,698		270		6
New Zealand.....		5,418,448	1,099	784,382		160,211	240	150,013
Other Oceania.....		28,136		460				275
Palestine.....		14,533	338		235	310		
<b>Total British Empire.....</b>	<b>15,598,659</b>	<b>35,513,717</b>	<b>6,189,021</b>	<b>18,962,157</b>	<b>9,494,753</b>	<b>6,498,237</b>	<b>5,009,054</b>	<b>4,859,393</b>
<b>FOREIGN COUNTRIES</b>								
Argentina.....	114	8,210,327		103,669		57,368	443,323	17,674
Austria.....	7,913	29,885	66,474	2,423	13,908		2,503	
Belgium.....	2,197,435	317,393	193,361	2,134,618	3,228,639	759,697	283,734	147,961
Bolivia.....		51,767						2,587
Brazil.....		2,300,782		303,531		44,091	500	2,868
Chile.....		892,697		28,844		4,005	466,729	62,073
China.....	2,338	615,472	51,195	4,457,469	9,911	2,693	32,647	210,392
Colombia.....		481,632		62,657	334,925	32,108		8,824
Costa Rica.....		84,380				70		8,030
Cuba.....	30	141,189		231,818	88	7,603	26	303,969
Czecho-Slovakia.....	35,836	25,975	30,349		754,728	155	4,254	
Denmark.....	29,766	1,709,458	643	74,436	3,056	20,512	951	40
Ecuador.....		29,320		573				3,387
Egypt.....	1	446,250	208			26	11,283	50
Estonia.....		2,507						
Finland.....	35,387	68,290	92	109	22,334	1,560	6,447	
France.....	707,728	2,661,140	420,402	764,112	405,895	842,010	1,079,570	45,398
French Africa.....		174,526				36,706		
French West Indies.....		7,616						15,647
St. Pierre and Miquelon.....	78	15,633	162	869	735	58,506		4,991
Germany.....	2,580,990	934,659	860,023	1,944,963	1,741,805	1,010,129	2,705,204	8,232
Greece.....		10,669			585	19,030		4,533
Guatemala.....		67,304		1,448		5,348		
Haiti.....		61,683		10,090				104
Honduras.....		7,125		26		16,490		32,999
Hungary.....		37,842		6,521			84	
Iceland.....		1,323				1,218		
Italy.....	42,203	231,549	48,529	443,282	192,295	491,878	107,362	9
Japan.....	10,404	1,024,300	244,284	7,190,942	545,028	379,096	92,071	457,807
Jugo-Slavia.....		72,377					1,577	
Lettonia.....		7,319						
Mexico.....		129,434	6,718	214,532	883,467	115,077		1,586,508
Morocco.....		120,322				1,296		
Netherlands.....	114,501	198,639	60,055	3,627,434	1,214,165	240,183	543,826	20,275
Dutch East Indies.....		2,591,152		49,894	23,640	1,782	514	39,466
Dutch Guiana.....		550						551
Dutch West Indies.....		32,336		45	99,502			698

Table 28—Canada's Foreign Trade in Mineral Products, Showing the Values by Countries, of Imports into Canada for Consumption and Exports of Canadian Merchandise, of the Principal Classes of Mineral Products, during the Fiscal Year Ending March 31, 1927—Concluded

Country	Iron and its products		Non-ferrous metals and their products		Non-metallic minerals and their products (except chemicals)		Chemicals and allied products	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
	\$	\$	\$	\$	\$	\$	\$	\$
<b>FOREIGN COUNTRIES—Con.</b>								
Nicaragua.....		17,447						4,216
Norway.....	92,899	178,044	1,461	119,505	15,400	214,340	82,537	
Panama.....		62,692		841		7,773		5,725
Paraguay.....		40,201		83			14,047	
Persia.....		15,756						
Peru.....		214,237		12,919	5,719,573	35,643		61,919
Poland and Danzig.....	1,003	21,617	761	929		200	25	
Portugal.....		12,334			1,474	5,684		144
Azores and Madeira.....		125		879		84		
Portuguese Africa.....		190,990		2,762		1,327		401,990
Rumania.....		440,368		794				
Russia.....		742,390		753,596		47,670		
Salvador.....		15,273		1,100		108		4,241
San Domingo.....		52,521		19		24		13,056
Siam.....		307,828						
Spain.....	29	288,968	53,609	98,249	50,871	12,663	10,334	25,816
Canary Islands.....		77,181				37,769		17
Sweden.....	1,244,292	312,916	133,374	3,572	27,247	20,871	8,561	
Switzerland.....	72,186	96,967	1,513,834	6,870	14,649	245	289,067	4
Syria.....		18,991	1,119		7			
Turkey.....		17,119			10		29,242	
United States.....	206,655,021	10,680,762	42,872,108	39,007,020	131,984,446	17,251,325	20,630,534	8,092,371
Alaska.....	672	2,262	20		1,261	204,302	17	129
Hawaii.....		6,400				100		32
Philippine Islands.....		1,098		1,246		6,750		4,112
Porto Rico.....		1,497		34				54,734
Uruguay.....		491,599		2,040		2,706		4,493
Venezuela.....		630,075		8,369		1,552		41,868
Other Foreign Countries.....		38,627	40	1,908				15,420
Total Foreign Countries....	213,830,826	38,771,107	46,558,821	61,677,040	147,289,954	22,011,601	26,835,661	11,715,360
<b>Total Imports and Exports.....</b>	<b>229,429,485</b>	<b>74,284,824</b>	<b>52,747,842</b>	<b>80,639,197</b>	<b>156,784,707</b>	<b>28,509,838</b>	<b>31,844,715</b>	<b>16,574,753</b>

## UNITED STATES TARIFF RATES ON MINERAL PRODUCTS IMPORTED

Since Canadian producers of mineral products market a large part of their annual output in the United States it was thought it might be of value to readers of this report to have at hand a guide to *United States Tariff* and the following tables were therefore compiled. These have been checked by the *Customs Division* of the *United States Treasury Department* at Washington, D.C., U.S.A.

Table 29—United States Tariff

Item Number	Material	Duty
<b>(a) On Metals and Manufactures of</b>		
1508	Antimony ore.....	Free
1547	Chromite—Chromite or chrome ore.....	Free
1550	Cobalt metal and ore.....	Free
29	Cobalt linoleate.....	10c. per lb.
29	Cobalt, oxide of.....	20c. per lb.
29	Cobalt salts and compounds (all other).....	30% ad val.
29	Cobalt sulphate.....	10c. per lb.
1457	Cobalt ore waste.....	10% ad val.
1556	Copper ore, regulus of, and black or coarse copper, and cement copper, old copper, fit only for remanufacture, copper scale, clippings from new copper, and copper in plates, bars, ingots, or pigs not manufactured or specially provided for.....	Free
1557	Copper sulphate or blue vitriol, copper acetate and subacetate.....	Free
381	Copper in rolls, rods or sheets.....	2½c. per lb.
	Engraver plates, not ground and seamless copper tubes and tubing.....	7c. per lb.
	Engravers plates, ground, and brazed copper tubes.....	11c. per lb.
	Brass rods, sheet brass, brass plates, bars, and strips, Muntz or yellow metal sheets, metal sheathing, bolts, piston rods and shafting.....	4c. per lb.
	Seamless brass tubes.....	8c. per lb.

Table 29—United States Tariff—Continued

Item Number	Material	Duty
<b>(a) On Metals and Manufactures of—Concluded</b>		
	Brazed brass tubes, angles and channels.....	12c. per lb.
	Bronze rods and sheets.....	4c. per lb.
	Bronze tubes.....	8c. per lb.
1529	Bullion gold or silver.....	Free
1634	Gold ores and sweepings.....	Free
1597	Iron ore including manganese iron ore and residuum from burnt pyrites.....	Free
1677	Sulphur in any form, and sulphur ore, and spent oxide of iron containing more than 25 per centum of sulphur.....	Free
392	Lead bearing ores and mattes—duty applied on lead contents, such duty shall not be applied to the lead contained in copper mattes unless actually recovered.....	1½c. per lb.
393	Lead bullion or base bullion, lead in pigs and bars, dross, reclaimed lead, scrap lead, antimonial lead, antimonial scrap lead, type metal, Babbitt, solder and all other combinations not specially provided for, duty to apply on lead contents.....	2½c. per lb.
	Lead in sheets, pipe, wire, shot, glazier's lead and lead wire.....	2½c. per lb.
47	Lead, linoleum of.....	30% ad val.
74	Lead litharge.....	2½c. per lb.
302	Manganese ore or concentrates containing in excess of 30 per centum of metallic manganese.....	1c. per lb. on metallic manganese content.
302	Molybdenum ore or concentrates.....	35c. per lb. on metallic molybdenum content.
302	Tungsten ore or concentrates.....	45c. per lb. on metallic tungsten content.
1634	Nickel mattes and ores of nickel.....	Free
300	Nickel oxide.....	1c. per lb.
390	Nickel and nickel alloys in pigs, ingots, shot, cubes and similar forms.....	3c. per lb.
390	Nickel in bars, rods, sheets, strips, tubing, etc.....	25% ad val.
390	In addition thereto on the foregoing if cold rolled, drawn or worked.....	10% ad val.
1596	Platinum, palladium and other metals of the platinum group.....	Free
394	Zinc-bearing ore of all kinds containing less than 10 per centum of zinc.....	Free
	Containing more than 10 per centum of zinc and less than 20 per centum.....	½c. per lb. on metallic zinc content.
	Containing more than 20 per centum of zinc and less than 25 per centum.....	1c. per lb. on metallic zinc content.
	Containing 25 per centum of zinc or over.....	1½c. per lb. on metallic zinc content.
395	Zinc in blocks, pigs or slabs and zinc dust.....	1½c. per lb.
395	Zinc in sheets.....	2c. per lb.
395	Zinc scrap for re-manufacturing.....	1½c. per lb.
<b>(b) On Non-Metallic Minerals</b>		
1619	Actinolite—crude, classified as "minerals, crude, not specially provided for".....	Free
214	Actinolite—ground, classified as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
1513	Arsenic—white or arsenious acid.....	Free
1512	Arsenic—Sulphide of.....	Free
379	Arsenic—Metallic.....	6c. per lb.
1515	Asbestos—crudes, fibres, sand.....	Free
1401	Asbestos—yarn.....	30% ad val.
69	Barytes—ore, crude.....	\$4 per ton
69	Barytes—ore, ground.....	\$7.50 per ton.
	Calcite—not mentioned by this name in the tariff. Chalk, crude, is free (Item 1545) and chalk, ground, is dutiable at 25% ad valorem (Item 20). ..	
1570	Corundum—ore.....	Free
1415	Corundum—ground.....	1c. per lb.
1619	Feldspar—crude, classified as "minerals, crude not specially provided for".....	Free
214	Feldspar—ground, dutiable as "earthy or mineral substances, wholly or partly manufactured, not specially provided for".....	30% ad val.
207	Fluorspar.....	\$5.60 per ton
213	Graphite or plumbago—crude or refined—amorphous.....	10% ad val.
213	Graphite or plumbago—crude or refined—crystalline lump, chip or dust.....	20% ad val.
213	Graphite or plumbago—crude or refined—crystalline flake.....	1½c. per lb.
236	Grindstones—finished or unfinished.....	\$1.75 per ton
1643	Gypsum—crude.....	Free
205	Gypsum—ground.....	\$1.40 per ton
75	Iron oxides—others, crude.....	½c. per lb.
75	Iron oxides—others, washed or ground.....	½c. per lb.
75	Iron oxides—"iron-oxide pigments not specially provided for".....	20% ad val.
204	Magnesite—crude.....	1½c. per lb.
204	Magnesite—caustic calcined.....	1½c. per lb.
204	Magnesite—dead burned and grain.....	2½c. per lb.
50	Magnesium sulphate—(Epsom salts).....	½c. per lb.
208	Mica—unmanufactured, valued at not above 15 cents per pound.....	4c. per lb.
208	Mica—unmanufactured, valued above 15 cents per pound.....	25% ad val.
208	Mica—cut or trimmed, and mica splittings.....	30% ad val.
208	Mica—ground.....	20% ad val.
808	Mineral waters.....	10c. per gal.
1640	Phosphate—"phosphates, crude".....	Free
1677	Pyrites—"sulphur ore, such as pyrites or sulphuret of iron in its natural state, and spent oxide of iron, containing more than 25% of sulphur".....	Free

Table 29—United States Tariff—Concluded

Item Number	Material	Duty
<b>(b) On Non-Metallic Minerals—Concluded</b>		
83	Salt—in bags, sacks, barrels, or other packages.....	11c. per cwt.
83	Salt—in bulk.....	7c. per cwt.
83	Sodium sulphate—crystallized or Glauber's salt.....	\$1.00 per ton
1667	Sodium sulphate, crude or salt cake.....	Free
207	Silica—crude, not specially provided for.....	\$4 per ton
207	Silica—for use as pigment, not specially provided for.....	\$7.50 per ton
209	Talc—crude.....	4c. per lb.
209	Talc—ground, washed, powdered, or pulverized (except toilet preparations).....	25% ad val.
1675	Tripoli—crude or manufactured, not specially provided for.....	Free
<b>(c) On Structural Materials and Clay Products</b>		
Clay Products—		
201	Brick—bath, chrome and fire, n.s.p.f.....	25% ad val.
	Magnesite brick.....	2c. per lb. and 10% ad val.
1536	Brick—not specially provided for.....	* Free
207	China clay or Kaolin.....	\$2.50 per ton
207	Clays or earths, unwrought or unmanufactured, including common blue clay and Gross-Almerode glass pot clay, n.s.p.f.....	\$1.00 per ton
207	Clays or earths, wrought or manufactured, n.s.p.f.....	\$2.00 per ton
210	Earthenware—common yellow, brown or gray made of natural, unwashed, and unmixed clay, plain or embossed; common salt-glazed stoneware; stoneware and earthenware crucibles; all the foregoing not ornamented, incised, or decorated in any manner.....	15% ad val.
210	Earthenware—common yellow, brown, or gray earthenware made of natural, unwashed and unmixed clay, plain or embossed; common salt-glazed stoneware; stoneware and earthenware crucibles; all the foregoing not ornamented, incised, or decorated in any manner and manufactures wholly or in chief value of such ware, n.s.p.f.....	20% ad val.
210	Earthenware—Rockingham.....	25% ad val.
203	Lime—n.s.p.f., including weight of container.....	10c. per cwt.
203	Lime—hydrated, including weight of container.....	12c. per cwt.
237	Slates—slate chimney pieces, mantles, slabs for tables, roofing slates, and all other manufactures of slate, n.s.p.f.....	15% ad val.
Stone—		
203	Limestone—(not suitable for use as monumental or building stone) crude, or crushed but not pulverized.....	5c. per cwt.
235	Limestone, freestone, granite, sandstone, lava and all other stone suitable for use as monumental or building stone, except marble, breccia, and onyx, n.s.p.f., hewn, dressed, or polished, or otherwise manufactured.....	50% ad val.
235	Unmanufactured, or not dressed, hewn or polished.....	15c. per cubic ft.
232	Marble, breccia and onyx, in block, rough or squared only.....	65c. per cubic ft.
232	Marble, breccia and onyx, sawed or dressed, over two inches in thickness.....	\$1.00 per cubic ft.
232	Marble, breccia and onyx slabs and paving tiles, containing not less than four superficial inches, if not more than one inch in thickness.....	8c. per superficial foot
	If more than one inch and not more than one and one-half inches in thickness.....	10c. per superficial foot
	If more than one and one-half inches and not more than two inches in thickness.....	13c. per superficial foot
	If rubbed in whole or in part.....	3c. per superficial foot in addition.
	Mosaic cubes of marble, breccia, or onyx, not exceeding two cubic inches in size, if loose.....	One-fourth of one cent per lb. and 20% ad val.
	If attached to paper or other material.....	5c. per superficial foot and 35% ad val.
1675	Stone and sand: burrstone in blocks, rough or unmanufactured; quartzite; traprock; rottenstones; tripoli and sand, crude or manufactured; cliff stone; freestone; granite and sandstones; unmanufactured, and not suitable for use as monumental or building stone; all of the foregoing n.s.p.f.....	Free

\*Except on imports from countries which impose a duty on similar products imported from U.S. On imports of these commodities a corresponding duty is levied.

ACCIDENTS IN THE MINERAL INDUSTRY IN CANADA, 1926

Statistics relating to fatal and non-fatal accidents in the Canadian mineral industry during 1926 were obtained from the several provincial governments and workmen's compensation boards. Compilations of these data were made for the whole of Canada for the first time and are included in this report. The total number of accidents occurring during the year as thus reported was 6,001, of which 123 were fatal. Coal mining accounted for a considerable proportion of the casualties: 77 fatal and 2,580 non-fatal accidents were recorded for this industry.

Table 30—Accidents in the Mineral Industry in Canada, 1926

Cause of accident	Nova Scotia		New Brunswick		Quebec		Ontario		Manitoba		Saskatchewan		Alberta		British Columbia		Canada	
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal
UNDERGROUND—																		
Falls of roof or face.....	11	367	....	25	9	64	4	482	....	....	2	8	16	58	2	289	44	1,293
Mine cars and locomotives.....	5	322	1	35	1	26	....	142	....	....	....	16	6	46	....	192	13	779
Gas and dust explosions.....	....	5	....	....	....	....	....	....	....	....	....	....	13	4	....	6	13	15
Explosives.....	....	3	....	6	2	11	10	21	....	....	....	....	....	7	1	21	13	69
Electricity.....	....	1	....	....	....	....	....	....	....	....	....	....	....	10	....	3	....	14
Mine fires.....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Miscellaneous.....	9	389	....	42	1	133	6	760	....	17	....	7	1	31	5	759	22	2,138
Total underground.....	25	1088	1	108	13	234	20	1405	....	17	2	31	36	156	8	1270	105	4,309
SURFACE—																		
Haulage and cars.....	....	49	....	1	1	10	2	18	....	....	....	3	3	7	....	78	6	166
Machinery.....	....	23	....	1	....	24	2	67	....	....	....	1	....	....	....	106	2	222
Miscellaneous.....	1	127	....	27	6	38	2	549	....	10	....	2	....	23	1	405	10	1,181
Total surface.....	1	199	....	29	7	72	6	634	....	10	....	6	3	30	1	589	18	1,569
Grand total.....	26	1287	1	137	20	306	26	2039	....	27	2	37	39	186	9	1859	123	5,878

## CHAPTER TWO.

## The Provinces

## NOVA SCOTIA

Because of the geographical position of Nova Scotia on the Atlantic seaboard, this province was among the first in Canada to have its mineral resources explored. This was done by Master Simon, a mining engineer who, with the famous explorer Champlain, accompanied a French colonizing expedition under de Monts. Master Simon reported a discovery, in 1604, of iron and silver in St. Mary's bay and native copper at Cape d'Or. The first mention of coal, though it was no doubt known to exist before, was made by Nicolas Denys in his *Description and Natural History of Acadia*, published in 1672. This in fact was the first mention of coal on the North American continent. Denys also noted the existence of gypsum or "plaister" on the Antigonish river, on the Bras d'Or lakes, at St. Ann's bay and at Mabou. Coal and gypsum mining are still the two most important mining industries of the province.

Protective tariff provisions designed to promote the coal-mining industry in Nova Scotia were made in 1877, when a duty was placed on American soft coal entering Canada; this made it possible for the Nova Scotia mine operators to compete with United States producers successfully in the markets along the St. Lawrence river. With the advent of the steel industry, using the iron ore from Newfoundland, the consumption of coal was further increased.

Gold was discovered in Nova Scotia about the year 1860, and the auriferous area has been variously estimated to represent from 3,000 to 5,000 square miles. Considerable work has been done on these gold ores, many of which contain arsenic, but of late there has not been much to report except that in the year 1923 when the price of arsenic was high, production was stimulated for a time.

In addition to coal, gypsum and gold, Nova Scotia also produces barytes, grindstones, quartz, salt, silica brick, clay products, lime, sand and gravel and stone.

Since the year 1785 the total coal production of Nova Scotia has amounted to 218,095,758 short tons valued at \$542,168,432.

Coal produced from 43 Nova Scotia mines in 1926 amounted to 6,747,477 short tons valued at \$26,845,226 and represented 93 per cent of the total value of the mineral production of the province. This was a greater tonnage than had been produced in any previous year since 1916 and was nearly double the output of 3,842,978 short tons mined in 1925 when a strike extending over about four months very materially reduced the output. Exports of coal in 1926 amounted to 559,546 short tons, while imports during the same period included 39,194 tons of anthracite and 23,921 tons of bituminous coal from the United States, 11,523 tons of anthracite from Great Britain and 2,340 tons, principally anthracite, from Germany and the Netherlands. In 1925 exports totalled 240,539 tons and imports of all grades from the United States, Great Britain and Germany totalled 233,086 tons. The falling-off in exports in that year was due to the four months' strike.

There were 9 mines producing gypsum in 1926 and the output amounted to 678,107 tons valued at \$1,187,918 as against 551,230 tons valued at \$1,070,408 in 1925. Seventy-seven per cent of all the gypsum produced in Canada in 1926 was derived from the mines of Nova Scotia. The major portion of the gypsum quarried was shipped as crude material to the United States.

Gold output amounted to 1,678 fine ounces being slightly greater than in 1925 and 1924. There were also gains over 1925 in the production of salt and quartz but the outputs of grindstones, sand and gravel and stone were slightly under the totals for the previous year.

Capital invested in the Nova Scotia mining industry in 1926 amounted to \$60,312,087 of which \$50,760,319 represented the cost of lands, buildings, machinery and tools, \$3,238,418 the cost of supplies and stocks on hand and \$6,313,350 the cash, trading and operating accounts. In 1925 this total stood at \$59,456,860, the cost of the lands, buildings, etc., being \$52,592,569, supplies and stocks on hand, \$2,953,102, and the cash, trading and operating accounts, \$3,911,189.

Of the 1926 total, 90.5 per cent was invested in coal mining, 4.1 per cent in gypsum mining, 1.6 per cent each in clay products plants and stone quarries, and the remainder in gold, barytes, grindstones, quartz, salt, lime, silica brick, silver and sand and gravel.

There were 13,993 people employed in the mining industry in 1926 of whom 585 were on salary receiving \$1,139,889 and 13,408 were wage-earners who were paid \$14,969,630 in wages. Coal mining accounted for 12,622 employees, gypsum mining gave work to 777, clay products plants engaged 203 people, gold mining used 151 men on the surface and underground, and the other mining operations accounted for the remainder.

Fuel and electricity used by the different mining industries cost \$2,941,725, including \$1,874,840 for bituminous coal, and \$996,233 paid for electric power. Small amounts of coke, fuel oil, gas, gasoline and wood were also used. The coal mining industry used 96 per cent of the total coal consumed and 97 per cent of the total electric power; gypsum mining used 88 per cent of the fuel oil, the remainder being consumed in gold mining and clay products manufacture in about equal amounts.

Primary power equipment in use consisted of 130 steam engines, 46 internal combustion engines and 2 hydraulic turbines with a total rating of 51,083 h.p. There were 502 electric motors with a total horse-power of 32,132; of these 150 were operated by purchased power and 352 by power generated in the same plant. Boilers in use numbered 170 with a total capacity of 42,182 h.p. according to the manufacturers' rating.

Table 31.—Value of Mineral Production of Nova Scotia,\* 1899-1926

Year	Value	Year	Value
	\$		\$
1899.....	6,817,274	1913.....	19,376,183
1900.....	9,298,479	1914.....	17,584,639
1901.....	7,770,159	1915.....	18,088,342
1902.....	10,686,549	1916.....	20,042,262
1903.....	11,431,914	1917.....	21,104,542
1904.....	11,212,746	1918.....	22,317,108
1905.....	11,507,047	1919.....	23,445,215
1906.....	12,894,303	1920.....	34,130,017
1907.....	14,532,040	1921.....	28,912,111
1908.....	14,487,108	1922.....	25,923,499
1909.....	12,504,810	1923.....	29,648,893
1910.....	14,195,730	1924.....	23,820,352
1911.....	15,409,397	1925.....	17,625,612
1912.....	18,922,236	1926.....	28,873,792

\*Includes a small production from Prince Edward Island.

Table 32.—Mineral Production of Nova Scotia, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLICS—</b>						
Arsenic..... lb.	381,092	15,244	—	—	—	—
Gold..... fine oz.	1,047	21,643	1,626	33,612	1,678	34,687
Silver..... fine oz.	44	29	86	59	112	70
<b>NON-METALLICS—</b>						
Barytes..... tons	151	3,308	95	2,259	100	2,307
Coal..... tons	5,557,441	22,280,554	3,842,978	15,826,680	6,747,477	26,845,226
Grindstones..... tons	338	12,525	439	16,723	311	15,136
Gypsum..... tons	441,752	915,845	551,230	1,070,408	678,107	1,187,918
Quartz..... tons	—	—	1,352	6,760	8,333	29,018
Salt..... tons	4,551	37,469	6,598	49,889	8,165	68,781
Silica brick..... M	—	—	—	—	1,358	64,461
Tripolite..... tons	33	838	—	—	—	—
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Clay products.....	—	359,288	—	*425,710	—	362,667
Lime..... bush.	tons 78	936	8,243	3,464	453,797	59,777
Stone..... tons	67,535	111,824	102,125	134,686	92,315	150,792
Sand and gravel..... tons	—	† 60,849	286,614	55,362	230,307	52,952
<b>Total.....</b>	—	<b>23,820,352</b>	—	<b>17,625,612</b>	—	<b>28,873,792</b>

\*Includes clay products from P.E.I. valued at \$3,020.

† Includes railway ballast from P.E.I., valued at \$11,490 in 1924—\$5,475 in 1925.

Table 33.—Principal Statistics of the Mineral Industry of Nova Scotia, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates, coal and other minerals shipped from mines and quarries
			\$		\$	\$	\$
1922.....	83	121	64,407,944	15,672	13,912,093	1,852,156	25,914,598
1923.....	80	113	63,544,560	15,280	17,613,514	2,927,317	29,645,670
1924.....	72	103	59,608,296	14,172	14,247,382	2,772,595	23,820,369
1925.....	67	95	59,456,860	9,905	12,458,285	2,229,275	17,624,283
1926.....	72	95	60,312,087	13,993	16,109,519	2,941,725	28,870,673

NOTE:—The difference between the net values shown above, and those given in the next preceding table, is in the figures for gold. While the figures given above represent receipts from sales, the gold figures in the next preceding tables represent receipts by the Royal Mint during the year, valued at the standard rate for gold of \$20·671834 per fine ounce.

Table 34.—Number of Plants and Capital Employed in the Mineral Industry of Nova Scotia by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Number of plants	Capital employed as represented by				Number of plants	Capital employed as represented by			
		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Auriferous quartz	4	76,500	2,850	19,800	99,150	7	701,124	4,300	2,170	707,594
Coal.....	47	47,691,027	2,660,857	3,797,594	54,149,478	43	45,313,364	2,850,987	6,148,651	54,313,002
Gypsum.....	8	2,132,294	134,096	62,999	2,329,389	9	2,255,254	219,539	48,448	2,523,241
Clay products....	†10	1,398,872	113,532	18,413	1,530,817	10	869,802	125,602	64,014	1,059,418
Sand and gravel...	—	—	—	—	—	8	18,951	—	—	18,951
Stone.....	10	1,116,909	30,867	9,483	1,157,259	9	1,133,993	22,968	9,041	1,166,002
All other mines..	*15	176,967	10,900	2,900	190,767	49	467,831	15,022	41,026	523,879
<b>Total.....</b>	<b>95</b>	<b>52,592,569</b>	<b>2,953,102</b>	<b>3,911,189</b>	<b>59,456,860</b>	<b>95</b>	<b>50,760,319</b>	<b>3,238,418</b>	<b>6,313,350</b>	<b>60,312,087</b>

† Includes data for 1 plant in Prince Edward Island.

\* Includes data for 1 quartz quarry, 2 grindstone quarries, 1 salt mine, 1 lime plant, 1 barytes mine and 9 sand and gravel pits.

† Includes data for 2 quartz mines, 1 barytes mine, 1 salt mine, 2 grindstone quarries, 1 silica brick plant and 2 lime plants.

Table 35.—Employees, Salaries and Wages in the Mineral Industry of Nova Scotia, 1925 and 1926

Industry	Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female	Male				
1925					\$	\$	\$
Auriferous quartz.....	2		47	49	3,300	21,509	24,809
Coal.....	486	34	8,333	8,853	965,997	10,707,656	11,673,653
Gypsum.....	20	4	605	629	62,452	480,224	542,676
Clay products.....	8	1	189	198	24,885	116,313	141,198
Sand and gravel.....			26	26		5,152	5,152
Stone.....	5		108	113	6,938	60,634	67,572
All other mines.....	5	1	31	37	9,670	23,555	33,225
<b>Total.....</b>	<b>526</b>	<b>40</b>	<b>9,339</b>	<b>9,905</b>	<b>1,073,242</b>	<b>11,415,043</b>	<b>12,488,285</b>
1926							
Auriferous quartz.....	6		145	151	12,000	95,971	107,971
Coal.....	485	37	12,100	12,622	1,003,717	14,041,702	15,045,419
Gypsum.....	32	3	742	777	77,547	542,023	619,570
Clay products.....	9	1	193	203	28,100	113,935	142,035
Sand and gravel.....	1		11	12	150	2,255	2,405
Stone.....	6		86	92	8,570	64,585	73,155
All other mines.....	4	1	131	136	9,805	109,159	118,964
<b>Total.....</b>	<b>543</b>	<b>42</b>	<b>13,408</b>	<b>13,993</b>	<b>1,139,889</b>	<b>14,969,630</b>	<b>16,109,519</b>

Table 36.—Wage-Earners in the Mineral Industry of Nova Scotia, by Months, 1925 and 1926

Month	1925	1926
January.....	12,593	11,941
February.....	12,618	10,963
March.....	9,735	9,987
April.....	3,323	12,634
May.....	3,487	13,776
June.....	3,518	13,908
July.....	3,573	14,089
August.....	11,103	14,008
September.....	12,510	13,956
October.....	12,601	14,307
November.....	12,960	14,551
December.....	12,725	14,681

Table 37.—Fuel and Electricity Used in the Mineral Industry of Nova Scotia, 1925 and 1926

Kind		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Bituminous coal.....	tons	394,923	1,415,968	509,458	1,874,840
Coke.....	tons	10	75	3,232	14,593
Fuel oil.....	Imp. gal.	15,568	2,672	43,104	4,954
Gasoline.....	Imp. gal.	39,040	11,139	95,843	28,822
Gas.....	M. cu. ft.			17,439	1,630
Wood.....	cord	2,808	12,636	4,069	20,602
Other fuel.....					51
Electric power.....	k.w.h.	54,973,439	786,785	71,557,807	996,233
<b>Total.....</b>			<b>2,229,275</b>		<b>2,941,725</b>

Table 38.—Power Employed in the Mineral Industry of Nova Scotia, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	146	63,083	130	49,061
Internal combustion engines.....	26	810	46	1,807
Hydraulic turbines and water wheels.....	5	670	2	215
<i>Total primary power.....</i>	<i>177</i>	<i>64,563</i>	<i>178</i>	<i>51,083</i>
Electric motors run by by purchased power.....	138	3,333	150	3,459
<b>Total power employed.....</b>	<b>315</b>	<b>67,896</b>	<b>328</b>	<b>54,542</b>
Electric motors run by primary power in same plant.....	294	27,201	352	28,673
<i>Total electric motors.....</i>	<i>432</i>	<i>30,534</i>	<i>502</i>	<i>32,132</i>
Boilers.....	179	44,780	170	42,182

## NEW BRUNSWICK

Although there are many minerals of economic importance in the province of New Brunswick, development of these resources has not been so rapid as in other provinces of the Dominion probably because of the general concealment of the rocks by forests, which adds to the difficulty of locating mineralized areas suitable for commercial development. Actual mining has not progressed therefore to the extent that geological indications would warrant and very little of the province has been prospected.

At present, activities are restricted mainly to the mining of bituminous coal, the quarrying of gypsum and stone, and the production of petroleum, natural gas, lime and clay products.

The first discoveries of bituminous coal were made in the vicinity of Grand lake, Queens county, and small quantities were obtained from that region in 1782.<sup>(1)</sup> At the present time coal is found at several places in the broad carboniferous belt, extending westward from the coast, in Albert and Kent counties through Kings, Queens, Sunbury and York. There is a well-known deposit near Minto, Grand lake district, at Beersville on the coal branch of the Richibucto rim and at Dunsinane, 30 miles southwest of Moncton, but it has been worked economically only in the vicinity of Minto. Here, the seam runs from 16 to 30 inches in thickness and is found at various depths down to 120 feet.

Gypsum ranks next to coal and is found in localized deposits. It is quarried at Hillsborough and part of the production is there made into plaster by the Albert Manufacturing Company, who have a large and well-equipped plant.

Natural gas and petroleum produced in New Brunswick come from the Stoney Creek district south of Moncton. Extensive deposits of bituminous or oil-shales occur in Albert and Westmorland counties near Moncton, but as yet these have not been worked commercially.

Other materials such as wolframite—the ore of tungsten—copper in the form of chalcopyrite, iron ore in the form of siliceous magnetite, antimony, manganese and tripolite have also been located but production of these minerals, with the exception of manganese, is now very limited.

The total recorded coal production of New Brunswick until the end of 1926 amounted to 3,111,893 short tons valued at \$11,728,097; the year of greatest output was 1922 when 287,513 short tons were mined. Production in 1926 from 11 mines amounted to 173,111 short tons valued at \$710,245 which was slightly more than that of 1920 and less than in any intervening year.

<sup>1</sup> W. G. Raymond, Proceedings of the Historical Society of St. John, 1897.

While the mine operators reported only 1,657 tons exported in 1926 directly from the mines to points in the United States, the Customs' records which include all coal cleared from customs through New Brunswick ports showed a total of 24,929 tons exported. During the same period imports cleared through customs ports of the province included 159,252 tons of coal from the United States and 35,307 tons from Great Britain. Anthracite included in this tonnage amounted to 96,901 tons of which 61,704 tons came from the United States and 35,197 tons from Great Britain.

Next to coal, the output of gypsum was the most important and amounted to 59,546 tons valued at \$468,411 in 1926 as against 71,745 tons valued at \$408,917 in 1925. Natural gas valued at \$128,300 showed a slight improvement over the output of 1925 and lime worth \$196,477 was more than double that of the previous year. Increases over 1925 occurred also in the production of grindstones, petroleum and clay products but the output of sand and gravel and stone was less.

Capital invested in the New Brunswick mining industries in 1926 amounted to \$3,533,577 of which \$2,858,131 represented the cost of lands, buildings, machinery and tools; \$219,027, the cost of supplies and stocks on hand; and \$456,419, the cash, trading and operating accounts and bills receivable. In 1925 the total stood at \$3,070,322; the cost of lands, buildings, etc. was \$2,253,133; supplies and stocks on hand, \$221,684; and cash, trading and operating accounts, \$595,505. Of the 1926 total, 48 per cent was invested in coal mines, the greater part of the remainder represented the capital employed in gypsum quarrying and gas and oil well operations.

Wage-earners in the mining industry numbered 1,049 who were paid \$780,662 and salaried employees consisting of 69 males and 9 females received \$172,034. Coal mining gave employment to 573 people, while the gypsum quarries, the grindstone quarries and the gas companies engaged an average of 314 during the year; lime manufacturing gave work to 92, clay products 65, and stone and sand and gravel, 83.

Fuel and electricity used by the different industries cost \$143,264. Wood consumed mainly in lime kilns amounted to \$61,854, and bituminous coal used principally by the coal mines and for the calcining of gypsum was worth \$47,077. Electric power, the greater part of which was utilized by the coal mines, amounted to 1,106,831 k.w.h. valued at \$27,845.

Primary power equipment in use consisted of 42 steam engines and 29 internal combustion engines with a total rating of 3,099 h.p. There were 32 electric motors with a capacity of 648 h.p., 4 of which were running on purchased power and 28 by primary power generated in the same plant. There were 44 boilers with a capacity of 2,950 h.p. in use during the year.

Table 39.—Value of Mineral Production of New Brunswick, 1899-1926

Year	Value	Year	Value
	\$		\$
1899.....	420,227	1913.....	1,102,613
1900.....	439,060	1914.....	1,014,570
1901.....	467,985	1915.....	903,467
1902.....	607,129	1916.....	1,118,187
1903.....	580,495	1917.....	1,435,024
1904.....	559,913	1918.....	2,144,017
1905.....	559,035	1919.....	1,770,945
1906.....	646,328	1920.....	2,491,787
1907.....	664,467	1921.....	1,901,505
1908.....	579,816	1922.....	2,263,692
1909.....	657,035	1923.....	2,462,457
1910.....	581,942	1924.....	1,969,260
1911.....	612,830	1925.....	1,743,858
1912.....	771,004	1926.....	1,811,104

Table 40.—Mineral Production of New Brunswick, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLICS—</b>						
Manganese ore..... tons	584	4,088	-	-	-	-
<b>NON-METALLICS—</b>						
Coal..... tons	217,121	932,185	208,012	815,367	173,111	710,245
Grindstones..... tons	2,113	99,299	1,642	79,661	1,684	90,975
Gypsum..... tons	86,738	476,804	71,745	408,917	59,546	468,411
Natural gas..... M. cu. ft.	599,972	113,577	639,235	122,394	648,316	128,300
Petroleum..... brl.	5,561	21,313	5,376	18,756	10,544	29,940
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Clay products.....	-	74,994	-	69,473	-	75,851
Lime..... bush.	208,180	108,890	202,106	92,216	477,226	196,477
Sand and gravel..... tons	141,897	23,999	70,156	12,331	70,931	11,360
Stone..... tons	19,229	114,111	25,391	124,743	19,108	99,545
<b>Total.....</b>	-	<b>1,969,260</b>	-	<b>1,743,858</b>	-	<b>1,811,104</b>

Table 41.—Principal Statistics of the Mineral Industry of New Brunswick, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of ore, concentrates, coal and other minerals shipped from mines and quarries
			\$		\$	\$	\$
1922.....	48	84	2,736,220	1,235	1,068,194	128,498	2,263,692
1923.....	44	79	3,300,139	1,334	1,339,229	154,823	2,462,457
1924.....	39	85	3,362,851	1,190	1,104,918	120,950	1,969,260
1925.....	36	85	3,070,322	1,113	1,003,169	114,629	1,743,858
1926.....	42	91	3,533,577	1,127	952,696	143,264	1,811,104

Table 42.—Number of Plants and Capital Employed in the Mineral Industry of New Brunswick, by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Number of firms	Capital employed as represented by				Number of firms	Capital employed as represented by			
		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Coal mining.....	16	1,229,267	33,348	459,961	1,722,576	11	1,357,866	24,623	305,620	1,688,109
Clay products....	3	70,746	26,838	18,329	115,913	3	75,700	23,127	21,818	120,645
Lime.....	5	193,712	27,352	27,708	248,772	6	212,339	25,264	39,322	276,925
Stone.....	9	107,524	33,928	27,574	169,026	11	128,488	37,172	17,919	183,579
All other mines..	*52	651,884	100,218	61,933	814,035	†60	1,083,738	108,841	71,740	1,264,319
Total.....	85	2,253,133	221,684	595,505	3,070,322	91	2,858,131	219,027	456,419	3,533,577

\* Includes data for 32 natural gas wells, 14 petroleum wells, 1 gypsum quarry, 2 grindstone quarries and 3 sand and gravel pits.

† Includes data for 35 natural gas wells, 17 petroleum wells, 2 gypsum quarries, 2 grindstone quarries and 4 sand and gravel pits.

Table 43.—Employees, Salaries and Wages in the Mineral Industry of New Brunswick, 1925 and 1926

Industry	Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female	Male				
1925					\$	\$	\$
Coal mining.....	24	2	614	640	59,036	536,871	595,907
Clay products.....	7	1	53	61	9,187	27,559	36,746
Lime.....	13	2	49	64	15,191	31,329	46,520
Sand and gravel.....			1	1		936	936
Stone.....	8	1	95	104	12,200	56,296	68,496
All other mines.....	15	4	224	243	48,148	206,416	254,564
<b>Total.....</b>	<b>67</b>	<b>10</b>	<b>1,036</b>	<b>1,113</b>	<b>143,762</b>	<b>859,407</b>	<b>1,003,169</b>
1926							
Coal mining.....	27	2	544	573	62,573	432,006	494,579
Clay products.....	7	1	57	65	9,811	29,237	39,043
Lime.....	13		79	92	19,706	47,576	67,282
Sand and gravel.....			1	1		936	936
Stone.....	5		77	82	6,176	53,549	59,725
All other mines.....	17	6	291	314	73,768	217,358	291,126
<b>Total.....</b>	<b>69</b>	<b>9</b>	<b>1,049</b>	<b>1,127</b>	<b>172,034</b>	<b>780,662</b>	<b>952,696</b>

Table 44.—Wage-Earners in the Mineral Industry of New Brunswick, by Months, 1925 and 1926

Month	1925	1926
January.....	876	900
February.....	871	882
March.....	877	925
April.....	975	922
May.....	1,068	999
June.....	1,181	1,128
July.....	1,147	1,106
August.....	1,080	1,071
September.....	1,026	1,025
October.....	940	996
November.....	852	972
December.....	897	892

Table 45.—Fuel and Electricity Used in the Mineral Industry of New Brunswick, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	10	99		
Bituminous coal..... tons	8,934	44,056	9,538	47,077
Fuel oil..... Imp. gal.	1,060	209		
Gasoline..... Imp. gal.	685	254	1,415	481
Gas..... M. cu. ft.	2,735	1,094	26,972	6,007
Wood..... cord	8,962	37,038	12,169	61,854
Electric power..... k.w.h.	1,193,285	31,879	1,106,831	27,845
<b>Total.....</b>		<b>114,629</b>		<b>143,264</b>

Table 46.—Power Employed in the Mineral Industry of New Brunswick, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	40	2,054	42	2,819
Internal combustion engines.....	21	223	29	280
<i>Total primary power.....</i>	<i>61</i>	<i>2,277</i>	<i>71</i>	<i>3,099</i>
Electric motors run by purchased power.....	4	190	4	130
<b>Total power employed.....</b>	<b>65</b>	<b>2,467</b>	<b>75</b>	<b>3,229</b>
Electric motors run by primary power in same plant.....	24	373	28	518
<i>Total electric motors.....</i>	<i>28</i>	<i>563</i>	<i>32</i>	<i>648</i>
Boilers.....	38	2,493	44	2,950

## QUEBEC

Quebec is the largest of all the Canadian provinces. It has a land area and water area of 706,834 square miles, and comprises the territory lying between the Hudson bay and Hudson strait and Labrador on the north, the gulf of St. Lawrence on the east, the province of New Brunswick and the United States on the south, and the province of Ontario on the west. Only the southern part of the province has ever been examined for mineralized areas, and until recently interest has been focussed on the non-metallic minerals of the province, as the main source of mineral wealth. In 1922, copper ores carrying gold were discovered in what is commonly called northern Quebec, but this term really refers to a section lying south of the main line of the Canadian National Railway, and just east of the Ontario boundary; it is a continuation of the mineralized belt of the Kirkland lake area that has added to Ontario's prominence as a mining area during recent years. Development of this section promises to be very extensive and with the introduction of transportation and smelting facilities, a large mining industry will no doubt be built up.

So far, the non-metallics have provided the greater part of the mineral output. Asbestos is the most important mineral product of Quebec. Other non-metallics, arranged in order of their relative importance are: mica, magnesite, feldspar, quartz, iron oxides, pyrites, soapstone, and graphite. In the older and better known sections of the province there are copper, lead and zinc properties, which are operated on a small scale. Molybdenite and chromite have also been mined at different times when the market warranted an output of these minerals.

In recent years the development of hydro-electric power in Quebec has proven a great stimulus to industrial activity, particularly in the Shawinigan Falls area. A new power site at Chute à Caron on the Saguenay river has been developed and was put in operation in 1926; the chief industry in this section is the manufacture of aluminium metal from bauxite ores.

The value of the mineral production of Quebec in 1926 was \$25,956,193, an increase of 7 per cent over the total output of 1925 and 36 per cent over that recorded in 1924. Asbestos production valued at \$10,095,488 represented 38.6 per cent of the aggregate value of the mineral production of Quebec for the year and an increase of 11.2 per cent over the total for asbestos for the previous year. Cement at \$4,535,386 was less than that recorded for 1925, but the quantity produced was 11 per cent greater. The value of the various kinds of stone produced amounted to \$3,728,228 which showed a slight falling off from that of 1925 while clay products at \$2,702,298 showed a gain, and sand and gravel at \$1,490,674 reached a value nearly three times as great as in the year immediately preceding. Zinc and lead produced at the Tetreault mine have shown marked increases in recent years while copper from the Eustis property has also shown an advance. Silver production, as a result of the increases in the production of lead, zinc and copper ores with which it is associated, also shows an upward trend. Other minerals showing

improvement in 1926 over 1925 were feldspar, magnesite, iron oxides, phosphate, pyrites, quartz, talc and lime, but decreases were noted in the outputs of iron ore, molybdenite, graphite, mica and mineral waters.

Capital employed in the mining industry in Quebec amounted to \$112,460,615 including \$96,598,904 invested in lands, buildings, machinery and tools; \$7,200,219 in supplies and stocks on hand; and \$8,661,492 in cash, trading and operating accounts and bills receivable. This was an increase of 35 per cent over the total capital investment of 1925, and was mostly due to the development in the mining industry in the northwestern section of the province.

Nearly double the number reported in 1925, or 15,555 employees in all, were employed in Quebec metal mines, non-ferrous smelters, non-metal mines and in the production of clay products and other structural materials. Of these 728 males and 52 females were on a salary basis and 14,775 were wage-earners. Salaried employees received \$1,285,966 and wage-earners, \$10,626,378.

The sand and gravel industry gave employment to 4,994 people, many of whom were engaged in getting out gravel for highway construction. Asbestos mining required 2,797 men, stone quarrying 2,338; and the mines of the Rouyn district reported an average of 1,223 for the year.

The trend of employment showed a rapid increase in June and July when over 14,000 people were at work in the mining industry as against 9,227 in May. The remaining months of the year, with the exception of December showed an average employment of over 10,000.

Fuel and electricity cost \$4,662,165 of which \$2,183,702 was expended for bituminous coal and \$2,081,994 for electric power. The cement industry consumed 59 per cent of the coal used and 12 per cent of the electric power, but the greater part of the total electric power was used by electric furnaces in the manufacture of aluminium at Arvida and Shawinigan Falls.

The total primary power equipment consisted of 203 units, 138 being steam engines and turbines, 51 internal combustion engines and 14 hydraulic turbines or waterwheels with a total rating of 57,880 h.p. There were 1,548 electric motors rated according to the manufacturers at 80,254 h.p.; of these 1,370 were operated by purchased power and 178 by power generated in the same plant. Boilers numbered 118 with a capacity of 6,810 h.p.

Table 47.—Value of Mineral Production of Quebec, 1899-1926

Year	Value	Year	Value
	\$		\$
1899.....	2,585,635	1913.....	13,475,534
1900.....	3,292,383	1914.....	11,836,929
1901.....	3,759,984	1915.....	11,619,275
1902.....	3,743,636	1916.....	14,406,593
1903.....	3,585,938	1917.....	17,400,077
1904.....	3,688,482	1918.....	19,605,347
1905.....	4,405,975	1919.....	21,267,947
1906.....	5,242,058	1920.....	28,886,214
1907.....	6,205,553	1921.....	15,157,094
1908.....	6,372,949	1922.....	17,647,930
1909.....	7,086,265	1923.....	20,308,763
1910.....	8,270,136	1924.....	19,136,504
1911.....	9,304,717	1925.....	24,284,527
1912.....	11,656,998	1926.....	25,956,193

Table 48.—Mineral Production of Quebec, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>METALLICS—</b>		\$		\$		\$
Copper..... lb.	1,893,008	246,546	2,510,141	352,474	2,674,058	368,886
Gold..... fine oz.	883	18,253	1,602	33,116	3,680	76,072
Iron ore, sold for export..... tons	1,408	3,771	3,978	11,934	200	600
Lead..... lb.	1,058,983	85,820	2,051,100	187,060	3,729,636	251,788
Molybdenite..... lb. (MoS <sub>2</sub> )	18,739	9,370	22,350	11,176	20,943	10,472
Silver..... fine oz.	83,814	55,972	214,943	148,451	375,986	233,513
Zinc..... lb.	2,909,008	184,547	9,936,000	757,322	12,904,176	956,199
<b>NON-METALLICS—</b>						
Asbestos..... tons	225,572	6,618,930	290,387	8,987,459	279,389	10,095,488
Feldspar..... tons	16,147	142,118	11,287	94,730	13,168	111,136
Graphite..... tons	46	3,275	359	30,900	326	29,516
Magnesite..... tons	3,873	101,356	5,576	122,325	4,571	137,431
Mica..... tons	1,677	185,020	2,415	178,800	1,664	170,118
Mineral water..... Imp. gal.	7,683	2,288	7,122	2,961	6,956	2,444
Iron oxides..... tons	7,146	58,540	6,985	89,173	6,518	100,923
Phosphate..... tons			16	189	40	800
Pyrites..... tons	4,032	10,619	12,250	38,750	14,100	42,117
Quartz..... tons	17,893	87,267	6,459	30,064	24,550	107,779
Talc and soapstone..... tons	449	20,273	704	30,130	885	38,209
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Cement..... brl.	2,758,316	4,796,959	3,365,802	5,689,991	3,727,377	4,535,386
Clay products.....		2,435,695		2,426,887		2,702,298
<b>Lime—</b>						
Quicklime..... bush.	2,219,359	640,990	2,272,751	601,081	2,509,006	667,480
Hydrated lime..... tons	5,848	58,947	9,432	72,249	11,922	98,636
Sand and gravel..... tons	2,197,145	414,428	2,203,196	533,850	5,233,696	1,490,674
Stone..... tons	1,592,089	2,925,520	2,242,916	3,855,455	2,305,734	3,728,228
<b>Total.....</b>		<b>19,136,504</b>		<b>24,284,527</b>		<b>25,956,193</b>

\* There is also in this province an important production of aluminium from imported ores.

Table 49.—Net Income from Sales of Products from the Mineral Industry of Quebec, 1926

Industry	1926
	\$
Metal mining and metallurgical industries.....	*7,570,787
Non-metal mining industries.....	10,835,961
Clay products and structural material industries.....	13,222,702
<b>Total.....</b>	<b>31,629,450</b>

\* Mine shipment values reported as received f.o.b. shipping point (i.e. gross value less freight and treatment charges) plus smelter sales less the cost of ores treated.

Table 50.—Principal Statistics of the Mineral Industry of Quebec, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates and minerals shipped from mines, smelters and quarries
			\$		\$	\$	\$
1922.....	164	169	77,191,610	6,288	6,073,236	1,545,089	17,647,939
1923.....	152	156	79,271,782	7,124	7,446,475	3,031,056	20,270,322
1924.....	240	242	77,163,613	6,953	7,300,935	2,800,763	18,921,782
1925.....	294	301	83,449,054	8,700	8,566,616	3,152,395	23,817,182
1926.....	331	1,399	112,460,615	15,555	11,912,344	4,662,165	31,629,450

Table 51.—Number of Plants and Capital Employed in the Mineral Industry of Quebec, by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Number of plants	Capital employed as represented by				Number of plants	Capital employed as represented by			
		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total
Copper-gold.....	29	\$ 8,087,712	\$ 116,728	\$ 689,184	\$ 8,893,624	63	\$ 16,046,935	\$ 305,781	\$ 2,067,352	\$ 18,420,068
Silver-lead-zinc...	5	2,552,755	41,100	348,789	3,242,644		52,815,000	49,100	465,000	3,329,100
Asbestos.....	18	32,854,079	1,901,807	3,158,210	37,914,096	15	30,131,261	2,112,348	2,442,537	34,686,146
Feldspar.....	9	35,825	7,060	18,000	60,885	10	135,770	11,927	22,856	170,553
Graphite.....	3	289,307	20,881	8,472	318,660					
Iron oxides.....	3	133,659	37,579	2,702	173,940	3	133,719	33,495	10,864	178,078
Mica.....	21	61,638	15,184	21,708	98,530	11	122,771	18,362	19,293	160,426
Quartz.....						6	172,516	9,268	5,426	187,210
Clay products.....	20	8,253,178	702,356	511,142	9,466,676	20	8,503,640	721,733	609,383	9,834,756
Cement.....						4	13,333,588	1,122,861	986,093	15,442,542
Lime.....	21	1,030,409	113,441	176,290	1,320,140	15	1,194,764	168,214	252,927	1,615,905
Sand and gravel.....	65	464,255	11,725	75,325	551,305	1,127	771,513	9,867	35,208	816,588
Stone.....	92	4,144,979	379,259	696,591	5,220,829	105	3,772,637	407,020	733,333	4,912,990
All other industries.....	*15	14,339,778	1,095,948	751,999	16,187,725	†15	19,464,790	2,230,243	1,011,220	22,706,253
Total.....	301	72,547,574	4,443,068	6,458,412	83,449,054	1,399	96,598,904	7,200,219	8,661,492	112,460,615

\* Includes data for 2 talc and soapstone mines, 2 quartz mines, 1 molybdenum mine, 1 iron ore mine, 2 magnesite mines, 1 iron pyrites, 1 phosphate quarry, 3 mineral water plants, and 2 cement plants.  
† Includes data for 1 iron ore mine, 1 molybdenite mine, 2 metallurgical works, 2 graphite mines, 2 talc and soapstone quarries, 3 magnesite mines, 2 mineral water plants, 1 pyrites mine and 1 phosphate mine.

Table 52.—Employees, Salaries and Wages in the Mineral Industry of Quebec, 1925 and 1926

Industry	Average number of employees				Salaries and wages			
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
1925						\$	\$	\$
Copper-gold.....	76	4	433		513	124,558	440,481	565,039
Silver-lead-zinc.....	11		273		284	26,920	235,918	262,838
Asbestos.....	107	10	2,453		2,570	280,085	2,715,422	2,995,507
Feldspar.....	3		106		109	7,700	68,588	76,288
Graphite.....	4	1	59		64	6,570	26,450	33,020
Iron oxides.....	2		45		47	3,869	31,585	35,454
Mica.....	4	1	205		210	5,892	71,561	77,453
Clay products.....	58	6	834	2	900	117,297	799,243	916,540
Cement.....	15		253		268	25,104	178,588	203,692
Lime.....	17	3	472		492	20,765	199,880	220,645
Sand and gravel.....	101	4	2,291		2,396	188,657	1,984,921	2,173,578
Stone.....	38	5	786	18	847	79,968	926,594	1,006,562
All other industries.....								
Total.....	436	34	8,210	20	8,700	887,385	7,679,231	8,566,616
1926								
Copper-gold.....	133	7	1,083		1,223	241,167	1,108,051	1,350,118
Silver-lead-zinc.....	13		232		245	26,466	274,412	300,878
Asbestos.....	129	12	2,656		2,797	328,813	3,215,284	3,544,097
Feldspar.....	3		122		125	4,690	63,100	67,790
Iron oxides.....	2		43		45	3,100	35,248	38,348
Mica.....	8	1	153		162	12,250	85,035	97,285
Quartz.....	5	1	54		60	13,756	35,624	49,380
Clay products.....	62	6	879	1	948	132,301	842,452	974,753
Cement.....	46	6	1,042		1,094	117,987	1,227,235	1,345,222
Lime.....	15	1	260		276	32,920	231,358	264,278
Sand and gravel.....	4		4,990		4,994	5,936	680,885	686,821
Stone.....	119	5	2,214		2,338	212,061	1,779,026	1,991,087
All other industries.....	189	13	1,046		1,248	154,519	1,047,768	1,202,287
Total.....	728	52	14,774	1	15,555	1,285,966	10,626,378	11,912,344

Table 53.—Wage-Earners in the Mineral Industry of Quebec, by Months, 1925 and 1926

Month	1925	1926
January.....	4,851	6,219
February.....	5,304	7,032
March.....	5,778	7,404
April.....	6,023	7,981
May.....	7,099	9,227
June.....	7,848	14,317
July.....	8,232	14,937
August.....	8,135	10,525
September.....	8,023	10,405
October.....	8,007	10,713
November.....	7,372	10,011
December.....	6,376	8,431

Table 54.—Fuel and Electricity Used in the Mineral Industry of Quebec, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	11,620	84,503	16,608	113,155
Bituminous coal..... tons	291,616	1,763,968	361,329	2,183,702
Coke..... tons	5,055	50,039	5,470	63,972
Fuel oil..... Imp. gal.	44,875	5,357	200,242	25,141
Gasoline..... Imp. gal.	56,748	17,477	100,081	32,091
Wood..... cords	35,268	175,703	33,354	161,579
Other fuel.....		545		31
Electric power..... k.w.h.	137,163,346	1,054,803	600,944,099	2,081,994
<b>Total.....</b>		<b>3,152,395</b>		<b>4,662,165</b>

Table 55.—Power Employed in the Mineral Industry of Quebec, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	178	4,195	138	5,340
Internal combustion engines.....	42	641	51	815
Hydraulic turbines and water wheels.....	3	650	14	51,725
<i>Total primary power.....</i>	<i>223</i>	<i>5,486</i>	<i>203</i>	<i>57,880</i>
Electric motors run by purchased power.....	1,307	69,884	1,370	74,100
<b>Total power employed.....</b>	<b>1,530</b>	<b>75,370</b>	<b>1,573</b>	<b>131,980</b>
Electric motors run by primary power in same plant.....	13	1,020	178	6,154
<i>Total electric motors.....</i>	<i>1,320</i>	<i>70,904</i>	<i>1,548</i>	<i>80,254</i>
Boilers.....	126	7,641	118	6,810

## ONTARIO

The province of Ontario may be described as the central province of the Dominion; Hudson bay and James bay are on the north, the St. Lawrence river and the Great Lakes constitute the greater part of the southern boundary, the province of Quebec lies immediately to the east, and Manitoba adjoins Ontario on the west. Traversing the province in easterly and westerly directions, the main lines of the Canadian National and Canadian Pacific Railways, with their many branch lines provide an extensive system of transportation. The main line of the Canadian Pacific Railway from Montreal to Winnipeg crosses the rich Sudbury section in a westerly direction, then runs along the north shore of lake Superior and through the lake of the Woods district. In the vicinity of Sudbury are the famous nickel-copper properties which supply the greater part of the world's nickel. The Temiskaming and Northern Ontario Railway connects North Bay and Cochrane and runs through the rich silver camps of the Cobalt and South Lorrain areas and has branch lines extending to other silver camps and to the gold camps of Kirkland lake and Porcupine.

Mining was carried on in Ontario as far back as 1770, when copper was recovered from mines on the shores of lake Superior. Thus, although very little mining of any consequence was done until recent years, this province early took its place in the mining history of Canada. About the year 1800, the first iron furnace in the province was erected in Leeds county, and a few years later a blast furnace for the smelting of bog ores was built at Normandale in Norfolk county. This initial effort proved a failure but later another attempt was made and smelting was carried on as a successful enterprise until 1847. Other iron furnaces were established in different parts of this older section of Ontario, but their operations were never very successful. In 1899 the Algoma Steel Corporation of Sault Ste. Marie opened the Helen mine on the northeast shore of lake Superior, and other iron properties, namely the Magpie mine and the Moose Mountain mine, have also been operated by this company. At the present time there is practically no production of iron ore in Ontario, the steel companies finding it more economical to bring in ore from the United States.

Construction of the Canadian Pacific Railway in 1883 led to the discovery of the rich nickel-copper ores in the Sudbury districts. Fortunately, about this time also it was found that the addition of nickel in the manufacture of steel armour plate made the plate much stronger and harder and therefore more useful. For some years after the opening up of the Sudbury area, one of the larger properties was operated as a copper mine, the nickel in the ore not being detected until about 1887. About 90 per cent of the world's output of nickel comes from the Sudbury area. The deposits there are very great. These ores also carry precious metals such as gold, silver, platinum, palladium, rhodium, and other related metals.

Ontario has the distinction of having had the first producing oil well on the American continent. This well was dug at Oil Springs in Lambton county in the year 1858, and from that time forward, oil wells have been discovered in other sections of that part of Ontario. However, no large oil fields have been found since 1905, and consequently the annual production has been steadily declining despite the additional production of a few small new fields.

As far back as 1866 gold was discovered in a spectacular occurrence at the Richardson property, Hastings county, and that district was the scene of a small gold rush at that time. Other properties in the same vicinity were worked intermittently, but at the present time no gold is being recovered from that area. Other finds were made from time to time in various parts of the province, and in 1899 Ontario reported a production of the yellow metal valued at \$421,591.

Five years after this, the Temiskaming and Northern Ontario Railway was projected and built from North Bay in a northerly direction. This opened up a country of which, hitherto, little had been known, and fortunately, passed right through the now famous Cobalt area, which was thus discovered in 1903. The finding of such a rich silver deposit led to intense prospecting on either side of the railway; the silver camps of Gowganda, Elk Lake and South Lorrain and the rich gold areas of Porcupine and Kirkland Lake are the present outcome of these early endeavours.

Although the production of silver has fallen off to some extent in late years, intensive prospecting underground had resulted in the finding of blind veins in some of the older properties; these have helped to maintain the silver output. Gold production on the other hand has grown

apace. Some companies with proven ore bodies have augmented their milling facilities, and increased their outputs. Through intensive underground exploration many others are changing prospects into mines.

Mention may here be made of the Silver Islet mine on an extremely small island off Thunder cape in lake Superior which was worked for fifteen years or more and which produced in the neighbourhood of \$3,500,000 worth of silver. This property was extremely rich, but was at one time flooded with water, and any attempt to work it since has met with very little success; diamond drilling has disclosed nothing of value at depth.

Lead is known to occur in different sections of Ontario, but until recent years little production was reported. In 1915, however, the Kingdon Mining, Smelting and Manufacturing Company Limited, opened up a property near Galetta in Carleton county, and production of lead has increased steadily since that time.

Ontario mineral deposits include a large number of non-metallic minerals of economic value. The largest mica mine in Canada is located near Sydenham in Frontenac county, and this county also supplies the greater part of the feldspar produced in the province. Talc is mined in the vicinity of Madoc in Hastings county. The salt-producing sections of the province are in the southwestern part. No rock salt is mined, the entire output coming from brine pumped from wells; the development of the salt industry dates back to 1865 when the first well was sunk at Goderich in Huron county in a search for oil.

Natural gas was discovered in Ontario in December, 1888, in Essex county near the present town of Leamington, and in the following year a well was opened up in Welland county about 25 miles west of Niagara Falls. At that time there was little market in Canada for natural gas, so the gas from these wells was piped to the neighbouring cities of Detroit, Toledo and Buffalo. Some of the older wells are now becoming depleted, but new wells are brought in from time to time. The natural gas supply, however, is now being conserved under government supervision so that the most economic use may be made of the available supply.

Clay products and construction materials industry has grown with the increasing demand for such commodities. Portland cement is manufactured in various sections of the province where suitable limestone and clay have been found at convenient distances from the large markets for this class of material. Hydrated lime and quicklime are also being manufactured and the growth of the brick industry has been rapid. The construction of highways and the building of concrete structures has enlarged the demand for gravel and crushed stone. These apparently common materials form a very large part of the non-metallic mineral production of the province.

In 1926 the value of the mineral production of Ontario was \$84,702,296, which was made up of metallic minerals valued at \$59,332,250; non-metallic minerals, including natural gas and oil valued at \$7,719,308; clay products valued at \$5,356,469 and other structural materials such as cement, lime, sand and gravel and stone valued at \$12,294,269.

Gold produced in Ontario during the year was valued at \$30,950,180, or equal to 36.5 per cent of the total mineral production of the province and more than twice the value of nickel which was second in the list. During the years 1887 to 1926 the total value of Ontario's output of gold amounted to \$214,643,358, of which ninety-nine per cent has been produced since 1912, the first year that the Porcupine camp began to produce in quantity. Nickel output value in 1926 amounted to \$14,374,163 or 17 per cent of the provincial total for all minerals. The total nickel produced in Ontario to the end of 1926 reached \$390,002,112 in value or 82.5 per cent more than the total gold production since 1887. Silver production in 1926 amounted to 9,274,965 fine ounces valued at \$5,760,402, the lowest since 1906 when the Cobalt camp was in its infancy. Since 1887, Ontario has produced silver to the value of \$239,384,567, which is still 12 per cent more than the value of gold produced during the same period. Copper produced in 1926 was greater than in any other year since 1918 and amounted to 41,312,867 pounds. The value at \$4,828,964 was less than in either of the two preceding years though the quantity was greater; explanation of this reduction in value is found in the changed method of computation and valuation of Ontario's copper production explained in Appendix one in the section on *Method of Computing Values*

and in Chapter five under *Copper Production*. Cobalt production in 1926 showed a considerable decline from the previous year, the output amounting to 664,778 pounds valued at \$1,136,014 as against 1,116,492 pounds valued at \$2,328,517 in 1925. This decline in production was due to the introduction into the world's markets of cobalt from central Africa where it occurs in association with copper. Prior to 1926 Ontario produced annually 95 per cent of the world's supply of cobalt. Lead production of the province is supplied by the Galetta lead mine in Carleton County; platinum and palladium and other precious metals are recovered in refining the nickel-copper ores from the Sudbury district, while small amounts of antimony and bismuth are recovered from time to time from the Cobalt ores.

Among the fuels and other non-metallics the output of natural gas has the greatest value; in 1926 it amounted to \$4,409,593 which was greater than in any preceding year.

Salt production valued at \$1,388,672 was higher than in 1925 and gypsum worth \$496,059 was also greater than in the preceding year. Substantial quantities of quartz, feldspar, graphite, mica and talc were mined and sold and a production was also reported of actinolite, asbestos grinding pebbles, mineral water, crude petroleum, pyrites, and silica brick.

Clay products were the principal items in the structural materials group, their value amounting to \$5,356,469 as against \$5,195,084 in 1925. Cement output was slightly less than in the previous year, the output of 3,398,860 barrels was valued at \$4,792,857 as against 3,462,358 barrels worth \$5,253,911 in 1925. Quicklime and hydrated lime showed slight gains and were valued at \$2,051,446 as against \$2,044,125 in 1925; stone of all kinds and sand and gravel both showed substantial gains over the totals for the previous year and reflected the progress being made in road-building and other construction work throughout the province.

Capital invested in Ontario's mining industry in 1926 amounted to \$278,657,190 as against \$258,967,755 in 1925. Of this, 31.8 per cent was invested in gold mining; 14.6 per cent in silver-cobalt mining; 11.7 per cent in non-ferrous metallurgical works; 10.8 per cent in natural gas; 4.7 per cent in clay products; 3.3 per cent in stone and sand and gravel and the remainder or 23.1 per cent among other mining industries, two of the most important being nickel-copper mining and the manufacture of Portland cement.

Employees numbered 20,060 in 1926 of whom 1,668 on salary received \$3,629,109 for their services and 18,392 wage-earners were paid \$23,358,526. Gold mining gave work to 6,677 people and the smelting and refining work of the nickel companies and the metallurgical works smelting the ores from the Cobalt district employed in all, 2,206. Clay products plants accounted for 2,171, stone quarries 1,665, while cement plants, nickel-copper mines and smaller properties accounted for other employees.

Monthly employment records showed February to be the month of least employment in 1926 and 1925 while June, July, August and September were the months during which the industry employed the largest number. Most mining companies show a slight increase in numbers on their payroll during the summer months. General construction and road-making for which stone and sand and gravel must be supplied also provide for greater employment in the summer months.

Expenditures for fuel and electricity were greater in 1926 than in 1925. More bituminous and anthracite coal was burned, but consumption of coke, fuel oil, gas and wood, was in each case, less. The value of electric power used in 1926 was \$2,653,455 as against \$2,385,999 in 1925. Gold mining took 43 per cent of the total electric power used in the mining industry; metallurgical plants used 20 per cent; silver-cobalt mining, 3 per cent; and cement plants, 19.5 per cent. Cement plants used 31 per cent of the total coal burned, and plants for the manufacture of brick and other clay products, used 22 per cent. Metallurgical industries accounted for 94 per cent of the total coke consumed and 81 per cent of the fuel oil used by the entire group.

Primary power equipment in use consisted of 284 steam engines, 263 internal combustion engines and 5 hydraulic turbines with a total rating of 27,066 h.p. There were 3,072 electric motors with a total h.p. of 148,327; of these 2,988 were operated by purchased power and 84 by power generated in the same plant. Boilers totalled 288 with a total capacity of 28,492 h.p. according to the manufacturers' rating.

Table 56.—Value of Mineral Production of Ontario, 1899-1926

Year	Value	Year	Value
	\$		\$
1899.....	9,819,557	1913.....	59,167,749
1900.....	11,258,099	1914.....	53,034,677
1901.....	13,970,010	1915.....	61,071,287
1902.....	14,619,091	1916.....	80,461,323
1903.....	14,160,033	1917.....	89,066,600
1904.....	12,582,843	1918.....	94,694,093
1905.....	18,833,292	1919.....	67,917,998
1906.....	25,111,682	1920.....	81,715,808
1907.....	30,381,638	1921.....	57,356,651
1908.....	30,623,812	1922.....	65,866,029
1909.....	37,374,577	1923.....	80,825,851
1910.....	43,538,078	1924.....	86,398,656
1911.....	42,796,162	1925.....	87,980,436
1912.....	51,985,876	1926.....	84,702,296

Table 57.—Mineral Production of \*Ontario, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLICS—</b>						
Antimony..... lb.			1,751	206	1,596	281
Arsenic (As <sub>2</sub> O <sub>3</sub> )..... lb.	3,748,225	313,281	2,156,441	113,324	2,055,477	135,549
Bismuth..... lb.	12,863	27,913	19,667	18,566	6,440	6,440
Cobalt..... lb.	9-8,704	1,682,395	1,116,492	2,328,517	664,778	1,136,014
Copper..... lb.	37,113,193	4,833,622	39,718,777	5,577,311	41,312,867	4,828,964
Gold..... fine oz.	1,241,728	25,668,795	1,461,039	30,202,357	1,497,215	30,950,180
Iron pig from Canadian ore..... tons	3,696	92,400				
Lead..... lb.	5,055,368	409,687	7,209,534	657,510	7,398,795	580,730
Nickel..... lb.	69,536,350	19,470,178	73,857,114	15,946,672	65,714,294	14,374,163
Palladium..... fine oz.	8,923	811,993	8,288	648,969	10,024	640,178
Platinum..... fine cz.	9,181	1,090,858	8,692	1,027,477	9,471	919,349
Radium, ruthenium osmeium						
inoium..... fine oz.	593	51,120				
Silver..... fine oz.	11,272,567	7,527,933	10,529,131	7,271,944	9,274,965	5,760,402
Zinc..... lb.			179,545	13,685		
<b>NON-METALLICS—</b>						
Actinolite..... tons	90	1,225	40	500	80	1,000
Asbestos..... tons	172	91,900	2	901	14	3,935
Feldspar..... tons	28,657	216,422	17,394	141,059	22,783	199,102
Fluorspar..... tons	76	1,343	12	200		
Garnets..... tons	360	7,200				
Graphite..... tons	1,288	72,842	2,210	127,863	2,401	165,344
Grinding pebbles..... tons			105	945	64	576
Gypsum..... tons	88,121	467,097	82,020	491,833	89,987	496,059
Mica..... tons	2,414	172,252	1,605	82,663	881	59,086
Mineral water..... Imp.gal.	201,670	13,133	183,012	25,452	208,400	27,277
Natural gas..... M cu. ft.	7,150,078	3,798,381	7,143,962	3,958,006	7,764,996	4,409,593
Peat..... tons			1,370	8,394		
Petroleum..... brl.	154,368	441,952	143,134	386,555	137,850	379,221
Pyrites..... tons	11,229	44,542	635	8,799	871	4,912
Quartz..... tons	111,645	192,855	188,560	324,526	192,733	339,304
Salt..... tons	203,228	1,337,311	226,315	1,352,504	252,345	1,388,672
Silica brick..... M					1,307	66,241
Talc and soapstone..... tons	10,718	130,577	13,678	174,116	14,882	178,986
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Cement..... brl.	3,564,499	5,668,671	3,462,358	5,253,911	3,398,860	4,792,857
Clay products.....		5,089,299		5,195,084		5,356,469
Lime—						
Quicklime..... bush.	4,391,050	1,401,545	5,115,974	1,566,540	5,402,261	1,593,468
Hydrated..... tons	35,989	438,607	41,610	477,585	39,217	457,978
Sand and gravel..... tons	6,174,284	2,041,959	5,201,604	1,779,129	6,483,163	2,292,678
Stone..... tons	2,840,173	2,789,368	3,022,712	2,817,333	3,622,042	3,157,288
<b>Total.....</b>		<b>86,398,656</b>		<b>87,980,436</b>		<b>84,702,296</b>

\* The total production of blast-furnace pig-iron in Ontario in 1924 was 415,971 tons valued at \$9,484,139 in 1925 it was 368,604 tons valued at \$7,873,816; and in 1926 it was 507,079 tons valued at \$11,166,738.

Table 58.—Net Income from the Sales of Products from the Mineral Industry of Ontario, 1925 and 1926 (Quantities shown are final shipments during the year; except as noted, values given are those reported as received, f.o.b. shipping point.

Industry and Product	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
<b>GOLD MINING INDUSTRY—</b>				
Crude bullion..... fine oz.	1,850,466	30,221,618	1,902,442	30,970,538
Concentrates, slags, etc..... tons	845	83,420	878	73,115
Total for gold mining industry.....		30,305,038		31,043,653
<b>NICKEL-COPPER INDUSTRY—</b>				
Nickel-Copper Mining—				
Ores (estimated value)..... tons	1,264,748	3,794,244	1,322,050	4,627,175
Nickel-Copper Metallurgical Works—				
Smelter and refinery sales less the estimated cost of ores treated..		18,614,978		16,280,470
(Products: Matte exported, and sales of refined nickel, converter copper, nickel oxide, gold, silver and metals of the platinum group).				
Total for nickel-copper industry.....		22,409,222		20,907,645
<b>SILVER-COBALT INDUSTRY—</b>				
Silver—Cobalt Mining				
Silver bullion..... fine oz.	5,552,022	3,823,921	3,094,394	1,924,693
Ores, concentrates and residues—				
(a) Shipped to Canadian smelters..... tons	4,995	2,113,520	4,755	2,961,860
(b) Exported..... tons	3,091	674,203	2,997	583,880
Silver-Cobalt Metallurgical Works—				
Smelter and refinery sales less the estimated cost of ores, etc., treated.....		2,603,564		1,406,874
(Products: Silver bullion, arsenic, nickel and cobalt (in the form of metal, oxides and salts), speiss residues, and silver-lead-bismuth bullion).				
Total for silver-cobalt industry.....		9,215,208		6,877,307
<b>LEAD INDUSTRY—</b>				
Lead Mining—				
Ores (estimated value)..... tons	4,467	357,336	4,535	367,309
Lead Metallurgical Works—				
Pig lead (less the estimated cost of ores treated)..... pounds	7,146,591	237,266	7,346,179	209,791
Zinc concentrates exported..... tons	311	13,685		
Total for lead industry.....		608,281		577,100
<b>Total—</b>				
(a) Metal mining and metallurgical works listed above.....		62,537,749		59,405,705
(b) Non-Metal mining industries, as per Table 57.....		7,084,316		7,719,308
(c) Structural materials and clay products industries, as per Table 57.....		17,089,582		17,650,738
<b>Grand total.....</b>		<b>86,711,647</b>		<b>84,775,751</b>

Table 59.—Principal Statistics of the Mineral Industry of Ontario 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates and other minerals shipped from mines, smelters and quarries
			\$		\$	\$	\$
1922.....	871	5,429	175,931,022	15,324	18,688,145	4,312,403	69,884,477
1923.....	1,224	5,613	240,899,437	17,978	23,469,827	9,932,155	71,082,009
1924.....	1,120	5,255	261,071,390	19,265	24,624,854	8,679,474	75,266,531
1925.....	1,210	5,898	258,967,755	19,346	25,908,951	8,463,276	86,711,647
1926.....	1,142	5,753	278,657,190	20,060	26,987,635	8,668,066	84,775,751

Table 60.—Number of Plants and Capital Employed in the Mineral Industry of Ontario by Classes and by Industries, 1925 and 1926

Industry	Number of plants	1925				Number of plants	1926			
		Capital employed as represented by					Capital employed as represented by			
		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total		Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total
Auriferous quartz	36	\$ 53,911,485	\$ 1,830,915	\$ 18,661,534	\$ 74,403,934	38	\$ 61,811,372	\$ 2,961,923	\$ 24,190,268	\$ 88,963,563
Silver-cobalt	38	34,024,247	1,657,085	8,364,287	44,045,619	37	31,412,576	998,390	8,093,755	40,504,721
Silver-lead-zinc						3	1,498,002	92,814	43,900	1,634,716
Metallurgical works	4	13,473,471	4,946,566	7,278,892	30,694,160	5	19,347,917	7,333,153	5,923,542	32,604,613
Feldspar	14	612,575	11,370	27,499	651,444	20	375,675	25,623	10,498	411,797
Graphite	3	529,063	23,414	31,173	583,650					
Mica	15	27,134	54,493	9,987	91,614	11	20,192	2,360	3,500	26,052
Natural gas	2,117	25,539,134	467,725	2,104,593	28,111,457	2,134	24,120,999	489,299	5,590,959	30,500,874
Petroleum	2,493	1,917,943	22,745	28,428	1,969,116	2,758	1,975,494	25,562	25,775	2,026,801
Quartz	11	781,079	74,528	11,618	867,225	8	722,323	92,436	2,580	817,339
Salt	11	1,471,271	245,311	592,322	2,319,904	10	1,539,870	253,665	582,402	2,375,937
Talc and soapstone	4	549,343	31,079	132,324	713,337	4	597,097	34,601	37,836	669,534
Clay products	132	10,376,421	1,660,368	1,136,865	13,074,014	132	10,150,773	1,406,165	1,593,036	13,149,974
Cement	4	16,728,722	1,114,312	596,593	12,513,981					
Lime	27	1,520,717	226,693	134,054	1,881,464	28	1,636,927	203,370	172,625	2,012,922
Sand and gravel	528	3,064,336	44,454	194,181	3,303,961	457	3,457,853	37,692	299,351	3,791,736
Stone	74	4,431,736	188,074	184,399	4,804,209	84	4,808,347	290,343	498,879	5,597,569
All other mines	*21	40,266,551	532,390	136,395	40,935,377	723	50,492,090	1,965,151	1,468,381	53,659,492
Total		5,898,205,111,397	13,148,097	40,798,261	258,967,755		5,753,213,967,118	15,944,794	48,745,245	278,657,190

\* Includes data for 1 lead-zinc mine, 6 nickel copper mines, 1 asbestos mine, 2 gypsum quarries, 6 mineral water plants, 1 iron pyrites mine, 1 actinolite mine, 1 fluor spar mine, 1 grinding pebbles plant and 1 peat mine.

† Includes data for 6 nickel-copper mines, 1 asbestos mine, 1 graphite mine, 2 gypsum quarries, 1 grinding pebbles plant, 3 cement plants, 1 actinolite mine, 1 pyrites mine, 1 silica brick plant, and 6 mineral water plants.

Table 61.—Employees, Salaries and Wages in the Mineral Industry of Ontario 1925 and 1926

Industry	Average number of employees				Salaries and wages			
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
<b>1925</b>						\$	\$	\$
Auriferous quartz	346	22	5,880		6,248	1,095,243	9,539,030	10,634,273
Silver-cobalt	126	10	1,652		1,788	358,190	2,218,224	2,576,414
Silver-lead-zinc	7	2	165		174	27,779	221,535	249,314
Metallurgical works	164	52	2,345		2,481	513,713	2,942,041	3,455,754
Feldspar	8		123		131	11,807	77,671	89,478
Graphite	3	1	38		42	7,500	34,501	42,001
Mica	2	2	36	19	59	6,434	39,192	45,626
Natural gas	249	62	331		692	306,491	319,345	625,836
Petroleum	13	1	112		126	15,928	99,203	115,131
Quartz	8		106		114	12,009	91,998	104,007
Salt	49	14	568	32	651	104,449	612,322	716,771
Talc and soapstone	5	2	50	3	57	12,480	47,971	60,451
Clay products	194	23	2,166		2,371	337,127	1,834,865	2,231,194
Cement	45	4	691	9	749	97,274	1,221,641	1,018,915
Lime	31	9	427		467	77,186	437,676	514,862
Sand and gravel	49	10	743		826	142,669	587,656	730,325
Stone	64	21	1,141		1,226	131,736	819,699	951,435
All other mines	27	3	1,538		1,615	85,828	1,972,376	2,058,204
<b>Total</b>	<b>1,331</b>	<b>297</b>	<b>17,755</b>	<b>63</b>	<b>19,346</b>	<b>3,343,833</b>	<b>22,566,118</b>	<b>25,909,951</b>
<b>1926</b>						\$	\$	\$
Auriferous quartz	382	21	6,274		6,677	1,197,573	9,543,317	10,740,890
Silver-cobalt	146	15	1,625		1,779	409,496	2,415,827	2,825,323
Silver-lead-zinc	22	1	211		234	43,159	300,972	344,128
Metallurgical works	166	35	2,361		2,506	502,945	2,790,821	3,292,569
Feldspar	9	1	275		285	13,760	132,021	145,781
Mica	2	1	43		46	5,418	25,566	30,984
Natural gas	330	76	454		860	455,271	387,034	842,305
Petroleum	14	1	118		133	17,594	96,476	114,070
Quartz	8		122		130	12,708	102,230	114,938
Salt	36	10	256	32	354	111,606	308,948	420,554
Talc and soapstone	5	2	45		55	11,949	47,934	59,024
Clay products	134	27	2,009	1	2,171	348,174	1,967,734	2,315,938
Lime	30	7	408		445	73,727	412,988	486,715
Sand and gravel	45	7	444		496	118,157	521,379	639,536
Stone	64	22	1,579		1,665	141,076	1,106,621	1,247,697
All other mines	24	3	1,464		2,344	177,498	3,290,973	3,377,376
<b>Total</b>	<b>1,459</b>	<b>299</b>	<b>18,359</b>	<b>33</b>	<b>20,060</b>	<b>3,629,109</b>	<b>23,358,526</b>	<b>26,987,635</b>

\* See note to Table 60.

† See note to Table 60.

Table 62.—Wage-Earners in the Mineral Industry of Ontario, by Months, 1925 and 1926

Month	1925	1926
January.....	14,173	15,341
February.....	14,022	15,113
March.....	14,974	15,523
April.....	16,114	16,286
May.....	17,390	17,356
June.....	18,169	18,124
July.....	17,884	18,484
August.....	17,850	18,553
September.....	17,816	18,525
October.....	17,881	18,470
November.....	16,864	17,499
December.....	16,272	16,300

Table 63.—Fuel and Electricity Used in the Mineral Industry of Ontario, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
Anthracite coal..... tons	3,349	\$ 37,795	6,270	\$ 60,129
Bituminous coal..... tons	572,743	3,456,041	588,161	3,656,281
Lignite coal..... tons	164,532	1,630,064	158,098	1,455,272
Coke..... tons	4,652,836	450,566	3,633,189	378,694
Fuel oil..... Imp. gal.	159,261	45,176	183,913	60,767
Gasoline..... Imp. gal.	98,902	24,359	35,476	19,675
Gas..... M. cu. ft.	73,463	388,144	72,644	346,820
Wood..... cords		45,132		36,875
Other fuel.....				
Electric power..... k.w.h.	344,245,602	2,385,999	377,113,449	2,653,455
<b>Total.....</b>		<b>8,463,276</b>		<b>8,668,666</b>

Table 64.—Power Employed in the Mineral Industry of Ontario, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	275	17,144	284	18,959
Internal combustion engines.....	240	5,342	263	6,627
Hydraulic turbines and water wheels.....	17	5,430	5	1,480
<i>Total primary power.....</i>	<i>532</i>	<i>27,916</i>	<i>552</i>	<i>27,066</i>
Electric motors run by purchased power.....	2,487	119,739	2,988	146,379
<b>Total power employed.....</b>	<b>3,019</b>	<b>147,655</b>	<b>3,540</b>	<b>173,445</b>
Electric motors run by primary power in same plant.....	172	5,713	84	1,948
<i>Total electric motors.....</i>	<i>2,669</i>	<i>125,458</i>	<i>3,072</i>	<i>148,327</i>
Boilers.....	276	27,150	288	28,492

## MANITOBA

Until recently, Manitoba was looked upon as a grain-growing province only and such work as was done on the mineral resources of the province was confined mainly to the non-metallic materials. The earliest mineral industry was the extraction of salt from the brine springs on the west side of lake Manitoba and lake Winnipegosis by freedmen from the Hudson's Bay Company service. As Winnipeg grew, demand became greater for building stone and the Tyndall limestone of the province is now used in the construction of many imposing Canadian buildings. Gypsum deposits were opened up northwest of lake St. Martin in the late nineties and have

been in continuous operation since that time. Brick-making was carried on in several towns as the demand grew and Portland cement manufacture was established at Fort Whyte.

Prospecting for metalliferous deposits and the establishment of metal mining are more recent developments. In the northwest section of the province the Flin Flon mine, a large low-grade copper-zinc deposit has been located. Experimental work is now being carried on in the treatment of the ore from this mine with every hope of success. Gold has been found in several areas east of lake Winnipeg and important mining companies are engaged in developing prospects in this field.

Manitoba is now regarded as having great possibilities as a mineral-producing province; more than three-fifths of its total area is underlain by Precambrian formations similar to those found so richly mineralized in the neighbouring province of Ontario.

Manitoba's mineral production in 1926 was valued at \$3,073,528, which was greater than any year since 1920 when the value of the output amounted to \$4,223,461. Cement valued at \$1,572,401 was more than three times greater in value than any other mineral product of the province and represented over 50 per cent of the total value of the mineral production for the year. Gypsum at \$461,461 was next on the list and the total value was greater than in any other year since 1921. All other non-metallics, with the exception of sand and gravel, showed improved output values in 1926. Gold production was practically negligible but some development work on gold properties was carried on during the year.

Capital employed in the mining industries in 1926 amounted to \$10,636,439 comprising \$9,066,988 invested in lands, buildings, machinery and tools; \$595,589 in value of supplies and stocks on hand, and \$973,862 in cash, trading and operating accounts and bills receivable. In 1925 the total capital invested was \$4,948,621 of which \$4,112,684 represented the total investment in lands, buildings, machinery and tools; \$374,859 in supplies and stock, on hand; and \$461,078 in cash, trading and operating accounts and bills receivable.

Employees in the mineral industry in 1926 numbered 780 of whom 65 received \$137,434 in salaries. The remainder, numbering 715, were wage-earners who were paid \$773,990 for their services. Auriferous quartz mining gave work to 103 people, clay products companies employed 171, stone quarrying accounted for 147 people and the remainder were working in the lime plants, sand and gravel pits, gypsum mining and milling, and in cement manufacture.

During the month of January, 338 people on the average were employed in the mining industry. The number rose each month until a maximum of 900 was reached in August. During the remaining months of the year there was a gradual recession to 474 in December.

Fuel and electricity used cost \$442,998; bituminous coal at \$270,152 represented 61 per cent of the total. Cement plants accounted for the greater part of the total bituminous coal and electric power consumed, while clay products industries and lime kilns used 83 per cent of the wood. Wood was also used by gold-mining companies in the outlying districts where electric power was not available.

Primary power equipment consisted of 29 units with a combined rating of 934 h.p. Of these 22 were steam engines at 840 h.p. and 7 were internal combustion engines rated at 94 h.p. Electric motors running on purchased power numbered 147 with a rating according to the manufacturer of 7,375 h.p. There were 17 boilers in use rated at 1,170 h.p.

Table 65.—Value of Mineral Production of Manitoba, 1907\*-1926

Year	Value	Year	Value
	\$		\$
1907 .....	898,775	1917 .....	2,628,264
1908 .....	584,374	1918 .....	3,120,600
1909 .....	1,193,377	1919 .....	2,868,378
1910 .....	1,500,359	1920 .....	4,223,461
1911 .....	1,791,772	1921 .....	1,934,117
1912 .....	2,463,074	1922 .....	2,258,942
1913 .....	2,214,496	1923 .....	1,768,037
1914 .....	2,413,489	1924 .....	1,534,249
1915 .....	1,318,387	1925 .....	2,276,759
1916 .....	1,823,576	1926 .....	3,073,528

\*Prior to 1907 the Manitoba production was grouped with Saskatchewan, Alberta and the Yukon.

Table 66.—Mineral Production of Manitoba, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>METALLICS—</b>		\$		\$		\$
Gold..... fine oz.	1,180	24,393	4,424	91,452	188	3,886
Silver..... fine oz.	140	93	477	329	18	11
<b>Non-METALLICS—</b>						
Gypsum..... tons	29,375	3,8,212	35,088	417,868	35,172	461,461
Natural gas..... M cu. ft.	200	60	200	60	200	60
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Cement..... brl.		746,750	407,395	1,037,929	612,155	1,572,401
Clay products..... bush.		117,450		173,794		248,497
Lime..... bush.	394,229	121,518	450,315	170,230	685,389	251,269
Sand and gravel..... tons		81,897	727,152	196,601	989,581	178,059
Stone..... tons	54,065	93,876	52,770	188,496	101,571	357,884
<b>Total.....</b>		<b>1,534,249</b>		<b>2,276,759</b>		<b>3,073,528</b>

Table 67.—Principal Statistics of the Mineral Industry of Manitoba, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates and other minerals shipped from mines
			\$		\$	\$	\$
1922.....	32	33	5,714,508	638	651,585	347,980	2,257,843
1923.....	29	30	5,776,757	629	680,183	328,521	1,767,871
1924.....	24	25	7,973,261	541	612,891	268,250	1,534,253
1925.....	26	26	4,948,621	699	711,735	315,005	2,275,832
1926.....	31	32	10,636,439	780	911,424	442,998	3,069,631

NOTE.—The difference between the net values shown above, and those given in the next preceding table, is in the figures for gold. While the figures given above represent receipts from sales, the gold figures in the next preceding table represent receipts by the Royal Mint during the year, value at the standard rate for gold of \$20-671834 per fine ounce.

Table 68.—Number of Plants and Capital Employed in the Mineral Industry of Manitoba by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Capital employed as represented by					Capital employed as represented by				
	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Auriferous quartz.....						3	3,413,091	79,209	211,497	3,703,797
Clay products....	5	114,244	47,100	39,900	201,244	6	116,884	62,308	54,400	233,592
Lime.....	3	398,849	21,621	12,605	433,075	4	522,217	19,229	22,586	564,032
Sand and gravel..	10	321,739	9,427	84,865	416,031	10	266,015	5,505	66,499	338,019
Stone.....	3	224,394	6,882		231,276	4	288,553	25,505	40,087	354,145
All other mines..	* 5	3,053,458	289,829	323,708	3,666,995	† 5	4,460,228	403,833	578,793	5,442,854
<b>Total....</b>	<b>26</b>	<b>4,112,684</b>	<b>374,859</b>	<b>461,078</b>	<b>4,948,621</b>	<b>32</b>	<b>9,066,988</b>	<b>595,589</b>	<b>973,862</b>	<b>10,636,439</b>

\*Includes data for 1 auriferous quartz mine, 1 gypsum quarry, 1 natural gas well and 2 cement plants.

†Includes data for 1 gypsum quarry, 2 cement plants and 2 natural gas wells.

Table 69.—Employees, Salaries and Wages in the Mineral Industry of Manitoba, 1925 and 1926

Industry	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
1925						\$	\$	\$
Clay products.....	11	1	139	6	157	22,060	66,151	88,211
Lime.....	4		63		67	5,950	48,339	54,289
Sand and gravel.....	7		133		140	16,200	85,794	101,994
Stone.....	7		82		89	15,242	90,689	105,931
*All other mines.....	25	3	213	5	246	54,232	307,078	361,310
<b>Total.....</b>	<b>54</b>	<b>4</b>	<b>630</b>	<b>11</b>	<b>699</b>	<b>113,684</b>	<b>598,051</b>	<b>711,735</b>
1926								
Auriferous quartz.....	9		94		103	25,109	146,686	171,795
Clay products.....	12	1	148	10	171	24,150	90,920	115,070
Lime.....	7		84		91	11,200	62,576	73,776
Sand and gravel.....	7		35		42	14,070	31,880	45,950
Stone.....	6	1	140		147	15,449	156,825	172,274
†All other mines.....	20	2	204		226	47,456	285,103	332,559
<b>Total.....</b>	<b>61</b>	<b>4</b>	<b>705</b>	<b>10</b>	<b>780</b>	<b>137,434</b>	<b>773,990</b>	<b>911,424</b>

\* See note to Table 68.

† See note to Table 68.

Table 70.—Wage-Earners in the Mineral Industry of Manitoba by Months, 1925 and 1926

Month	1925	1926
January.....	240	338
February.....	223	392
March.....	258	456
April.....	445	561
May.....	533	696
June.....	695	817
July.....	774	889
August.....	703	900
September.....	698	736
October.....	556	704
November.....	467	535
December.....	466	474

Table 71.—Fuel and Electricity Used in the Mineral Industry of Manitoba, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	180	1,052	196	1,215
Bituminous coal..... tons	22,866	182,132	33,695	270,152
Lignite coal..... tons	300	1,641	35	327
Coke..... tons	63	381	52	2,186
Fuel oil..... Imp. gal.			300	39
Gasoline..... Imp. gal.	15	5	12,270	5,614
Wood..... cords	15,174	73,080	19,062	91,326
Electric power..... K.W.H.	8,976,830	56,714	12,637,679	72,139
<b>Total.....</b>		<b>315,005</b>		<b>442,998</b>

Table 72.—Power Employed in the Mineral Industry of Manitoba, 1925 and 1926

	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	15	575	22	840
Internal combustion engines.....	4	15	7	94
<i>Total primary power.....</i>	<i>19</i>	<i>590</i>	<i>29</i>	<i>934</i>
Electric motors run by purchased power.....	130	7,145	147	7,375
<b>Total power employed.....</b>	<b>149</b>	<b>7,735</b>	<b>176</b>	<b>8,309</b>
Electric motors run by primary power in same plant.....	17	250	.....	.....
<i>Total electric motors.....</i>	<i>147</i>	<i>7,395</i>	<i>147</i>	<i>7,375</i>
Boilers.....	14	905	17	1,170

## SASKATCHEWAN

Saskatchewan, the great grain-growing province of the Dominion, lies between Alberta and Manitoba. While the greatest development in this province so far has been in agriculture, there is each year an appreciable production of lignite coal, clays and clay products, sand and gravel, sodium sulphate, and occasionally other mineral products. Large clay deposits both of fire clay and of clay suitable for the manufacture of pottery, occur south of Moose Jaw and the economic development of these deposits on a great scale is only a matter of time. Large areas of unprospected territory in the northern part of the province are known to be underlain by the same Precambrian rocks that have proved mineral-bearing in other parts of Canada. In this territory, lode gold has been reported near Beaver lake, and iron and other metallic minerals near lake Athabasca. In connection with the sodium sulphate deposits, it may be noted that these occur as lakes which are solid at certain seasons, and mushy or even liquid at other times. Investigations have been carried on for several years by the *Mines Branch* at Ottawa to determine the commercial possibilities of these areas. Available tonnage has been blocked out and some deposits have been worked successfully. Shipments of sodium sulphate from Saskatchewan have reached Ontario points and the use of the natural sulphate has partially replaced the manufactured product in some fields. Development of the lignite deposits has progressed to a greater extent in Saskatchewan than the production of any other mineral in that area. Most of the mines are operated on a small scale, largely to meet the needs of the surrounding country, and many of them are only worked in the winter months, as the owners find it more profitable to grow wheat than to mine coal during the summer season.

Mineral production from the province of Saskatchewan amounted in value to \$1,193,394 in 1926, or more than in any other year since 1922. Coal is the most valuable mineral and at \$819,805 represented 68·5 per cent of the total value of all minerals produced in the province during the year under review. Clay products and sand and gravel were produced in greater quantities than in 1925 and though the quantity of sodium sulphate was greater, the value was less than in the preceding year. Volcanic dust production mainly for use in cleansing powders was less than in 1925.

Capital employed in the mining industries of the province amounted to \$5,119,845, the greater part being invested in the lands, building and plants of coal mines. This represents an increase of 37 per cent over the capital investment in 1925.

Employees totalled 742 people, 65 as salaried employees and 677 as wage-earners. Salaries paid amounted to \$106,867 and wages totalled \$601,745. Of the total number employed, 515 were working in and about the coal mines of the province, 161 in the clay products industries and the remainder were engaged in the production of sand and gravel, sodium sulphate and volcanic dust.

Fuel consumption, principally bituminous and lignite coal used under colliery boilers amounted to \$111,661.

Total primary power employed consisted of 41 units; 36 steam engines and 5 internal combustion engines, with a total manufacturers' rating of 2,316 h.p. There was one 25 h.p. motor running on purchased power and 20 motors with a combined rating of 386 h.p. operated on primary power generated by the same plant. There were 25 boilers with a total of 2,816 h.p. in use by the various mining companies during the year.

Table 73.—Value of Mineral Production of Saskatchewan, \*1907-1926

Year	Value	Year	Value
	\$		\$
1907.....	533,251	1917.....	860,651
1908.....	413,212	1918.....	1,019,781
1909.....	456,246	1919.....	1,521,964
1910.....	498,122	1920.....	1,837,468
1911.....	636,706	1921.....	1,114,220
1912.....	1,165,642	1922.....	1,255,470
1913.....	881,142	1923.....	1,047,583
1914.....	712,313	1924.....	1,128,100
1915.....	451,933	1925.....	1,076,392
1916.....	590,473	1926.....	1,193,394

\*Prior to 1907 the Mineral Production of Saskatchewan was grouped with Manitoba, Alberta and the Yukon.

Table 74.—Mineral Production of Saskatchewan, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
NON-METALLICS—						
Coal..... tons	479,118	886,668	471,965	870,875	439,803	819,805
Sodium sulphate..... tons	1,083	6,004	3,876	19,380	6,775	13,550
Volcanic dust..... tons	245	1,103	160	1,380	90	630
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—						
Clay products.....		137,280		95,952		214,113
Sand and gravel..... tons	702,713	97,045	579,901	88,805	863,901	145,296
<b>Total.....</b>		<b>1,128,100</b>		<b>1,076,392</b>		<b>1,193,394</b>

Table 75.—Principal Statistics of the Mineral Industry of Saskatchewan, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of ore, coal and other minerals shipped from mines
			\$		\$	\$	\$
1922.....	71	71	4,202,597	587	577,117	38,170	1,255,470
1923.....	78	78	4,747,582	738	760,392	65,274	1,047,583
1924.....	81	81	4,157,426	678	669,000	65,641	1,128,100
1925.....	68	68	3,732,909	652	647,014	91,025	1,076,392
1926.....	73	74	5,119,845	742	708,612	111,661	1,193,394

Table 76.—Number of Plants and Capital Employed in the Mineral Industry of Saskatchewan by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Capital employed as represented by					Capital employed as represented by				
	Num- ber of plants	Cost of lands, buildings, ma- chinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total	Num- ber of plants	Cost of lands, buildings, ma- chinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Coal.....	55	2,543,226	58,990	224,621	2,826,837	53	3,630,888	57,918	220,708	3,909,514
Clay products...	5	525,006	80,515	6,388	611,909	7	620,880	77,153	41,617	739,650
Sand and gravel..	5	39,750			39,750	7	39,750			39,750
All other mines..	* 3	254,413			254,413	† 7	400,631	17,000	13,300	430,931
Total.....	68	3,362,395	139,505	231,009	3,732,909	74	4,692,149	152,071	275,625	5,119,845

\* Includes data for 1 sodium sulphate plant and 2 volcanic dust plants.  
† Includes data for 2 volcanic dust plants, 4 petroleum wells and 1 sodium sulphate plant.

Table 77.—Employees, Salaries and Wages in the Mineral Industry of Saskatchewan, 1925 and 1926

Industry	Average number of employees				Salaries and wages		
	Salaried employees		Wage- earners	Total	Salaries	Wages	Total
	Male	Female	Male				
1925					\$	\$	\$
Coal.....	47	4	517	568	85,305	471,546	556,851
Clay products.....	10		34	44	17,349	32,310	49,659
Sand and gravel.....			3	3		2,504	2,504
All other mines.....	1		36	37	3,000	35,000	38,000
Total.....	58	4	590	652	105,654	541,360	647,014
1926							
Coal.....	42	3	470	515	77,435	455,256	532,691
Clay products.....	15		146	161	23,113	65,332	88,445
Sand and gravel.....	1		7	8	139	19,900	20,039
All other mines.....	3	1	54	58	6,180	61,257	67,437
Total.....	61	4	677	742	106,867	601,745	708,612

Table 78.—Wage-Earners in the Mineral Industry of Saskatchewan, by Months, 1925 and 1926

Month	1925	1926
January.....	789	689
February.....	682	651
March.....	592	582
April.....	432	429
May.....	390	515
June.....	410	505
July.....	427	464
August.....	389	443
September.....	508	541
October.....	802	735
November.....	836	815
December.....	781	746

Table 79.—Fuel and Electricity Used in the Mineral Industry of Saskatchewan, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	4,225	33,667	4,279	35,340
Lignite coal..... tons	24,526	26,430	29,039	39,948
Fuel oil..... Imp. gal.	247,069	25,112	320,023	30,081
Gasoline..... Imp. gal.	1,374	406	1,980	651
Wood..... cords	220	1,290	433	2,226
Electric power..... K.W.H.	203,600	4,120	220,175	3,415
<b>Total.....</b>		<b>91,025</b>		<b>111,661</b>

Table 80.—Power Employed in the Mineral Industry of Saskatchewan, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	36	1,931	36	2,113
Internal combustion engines.....	7	192	5	203
<i>Total primary power.....</i>	<i>43</i>	<i>2,123</i>	<i>41</i>	<i>2,316</i>
Electric motors run by purchased power.....	3	18	1	25
<b>Total power employed.....</b>	<b>46</b>	<b>2,141</b>	<b>42</b>	<b>2,341</b>
Electric motors run by primary power in same plant.....	16	336	20	386
<i>Total electric motors.....</i>	<i>19</i>	<i>354</i>	<i>21</i>	<i>411</i>
Boilers.....	19	2,000	25	2,816

## ALBERTA

The province of Alberta lies immediately east of British Columbia, the summit of the Rocky mountains marking its western boundary as far north as 54°, north latitude. From that point, northerly, the line follows the 120th meridian to Mackenzie district. Alberta is yet for the most part, a grazing and wheat-growing country, but the coal mines which are located in the area immediately to the east of the mountains, contribute largely to the mineral production of Canada. Natural gas is also of considerable importance in Alberta as a fuel for domestic and industrial purposes. Prospecting for oil has been carried on over considerable areas and some success has been attained. Gold is also known to occur in the gravels underlying some of the rivers.

As in Ontario, where the opening of mining areas followed the building of railroads, so also the construction of the Canadian Pacific Railway and the Canadian National Railway through the mountain led to the exploitation of the coal areas in Alberta. The famous Crowsnest pass, through which the southerly branch of the Canadian Pacific Railway transcontinental line runs, has coal within easy access from the railroad. Along the main line of the same railway which enters the mountains near Calgary and Banff, a large amount of work has also been done in the vicinity of Bankhead, and quantities of semi-anthracite coal have been produced, but these workings are closed down at the present time. The Canadian National Railway running west from Edmonton passes through coal areas for a considerable distance.

Deposits of bituminous sands in the northern part of the province along the Athabasca river have become of economic importance in recent years. Experimental work is being carried on by the *University of Alberta* at Edmonton, and by officials of the *Mines Department* at Ottawa, to promote the utilization of these sands.

Mineral production in the province of Alberta was valued at \$26,977,027 in 1926 as against \$25,318,866 in 1925.

Coal produced from 316 mines in 1926 amounted to 6,503,705 short tons valued at \$20,886,103 and represented 78 per cent of the total value of the mineral production of the province. Alberta mines produce three kinds of coal: bituminous, sub-bituminous and lignite. The output for 16 bituminous mines amounted to 2,858,456 tons valued at \$9,984,386; sub-bituminous mines numbering 23 produced 489,736 tons worth \$1,458,116, and 277 lignite properties yielded 3,155,513 tons worth \$9,443,601. In 1925 there were 353 coal mines with a total output of 5,869,031 tons valued at \$20,021,484.

Natural gas production in 1926 amounted to 10,794,697 thousand cubic feet worth \$3,019,221 as against 9,119,500 thousand cubic feet worth \$2,752,545 in the previous year. The value of petroleum production increased from \$845,394 in 1925 to \$902,504 in 1926. Salt production at \$22,696 was nearly three times greater than the year before.

Cement output in 1926, amounting to 423,766 barrels worth \$873,621, showed an increase in quantity and a decrease in value over the output of 1925. Clay products worth \$804,933, increased 30 per cent over that of the previous year. Lime output was about the same as in the preceding year and the value of sand and gravel was more than three times that of 1925 and the production of stone more than double that of the preceding year.

Capital employed in the mining industry of the province amounted to \$102,875,177 in 1926 as against \$86,735,632 in 1925. Of this amount, \$87,753,708 represented the cost of lands, buildings, machinery and tools; \$2,427,709 the cost of supplies and stocks on hand; and \$12,693,760 the cash, trading and operating accounts and bills receivable. The capital employed in coal mines in 1926 represented 54.5 per cent of the total; natural gas 25.6 per cent and oil wells 15 per cent. The remaining investments were in clay products plants, cement mills, salt wells, lime kilns, stone quarries and in sand and gravel pits and equipment.

The number employed totalled 10,733 persons; 878 were on salary and received \$1,899,856 for their services, and 9,855 were wage-earners who were paid \$12,599,354. Coal mining gave employment to 9,324, oil and gas wells 820, clay products 346, and other mines and quarries, 243. The trend of employment in Alberta is the reverse of most of the other provinces, since the greatest number are employed in the winter months when the demand for coal is greater. Accordingly we find only an average of 7,276 people engaged in mining in May and 12,265 in December.

Fuel and electricity used in 1926 by the Alberta mining industries amounted to \$1,380,096 as against \$1,226,903 in the previous year. Bituminous and lignite coal consumption, the greater part of which was used under colliery boilers, accounted for 49 per cent of the total and electricity also used in large part by the coal mines represented 46 per cent.

Primary power equipment consisted of 318 steam engines with a total capacity of 35,381 h.p. and 87 internal combustion engines rated at 1,650 h.p. There were 514 motors with a combined horse power of 21,018 operating on purchased power and 349 motors rated at 9,591 h.p. running by power generated in the same plant. Boilers numbered 268, which, according to the manufacturers, were rated at 31,364 h.p.

Table 81.—Value of Mineral Production of Alberta, 1907-1926

Year	Value	Year	Value
	\$		\$
1907.....	4,657,524	1917.....	16,527,535
1908.....	5,122,505	1918.....	23,109,987
1909.....	6,047,447	1919.....	21,087,582
1910.....	8,996,210	1920.....	33,586,456
1911.....	6,662,673	1921.....	30,562,229
1912.....	12,073,589	1922.....	27,872,136
1913.....	15,054,046	1923.....	31,287,536
1914.....	12,684,234	1924.....	22,344,940
1915.....	9,909,347	1925.....	25,318,866
1916.....	13,297,543	1926.....	26,977,027

Table 82.—Mineral Production of Alberta, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>Non-Metallics—</b>						
Bituminous sands..... tons	531	2,127	1,148	4,594	528	2,112
Coal..... tons	5,189,729	18,884,318	5,869,031	20,021,484	6,503,705	20,886,103
Natural gas..... M cu. ft.	7,131,086	1,796,618	9,119,500	2,752,545	10,794,697	3,019,221
Petroleum..... bbl.	844	4,135	183,491	845,394	216,050	902,504
Salt..... tons			833	8,304	2,037	22,696
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Cement..... brl.		945,700	395,857	913,529	423,766	873,621
Clay products.....		540,477		618,860		804,933
Lime..... bush.	90,214	36,279	98,938	39,852	108,309	39,517
Sand and gravel..... tons		115,969	534,892	107,436	1,754,965	412,430
Stone..... tons	16,698	19,317	3,979	6,868	3,759	13,890
<b>Total.....</b>		<b>22,344,940</b>		<b>25,318,866</b>		<b>26,977,027</b>

Table 83.—Principal Statistics of the Mineral Industry of Alberta, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of coal, oil, gas and other minerals shipped from the mines and wells
			\$		\$	\$	\$
1922.....	306	357	65,918,600	10,343	16,131,521	734,678	27,872,136
1923.....	391	444	70,843,708	11,295	19,306,818	1,004,017	31,287,536
1924.....	387	446	87,003,765	8,716	13,684,225	991,549	22,344,940
1925.....	391	465	86,735,632	10,486	13,808,354	1,226,903	25,318,866
1926.....	425	473	102,875,177	10,733	14,499,210	1,380,096	26,977,027

Table 84.—Number of Plants and Capital Employed in the Mineral Industry of Alberta by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Capital employed as represented by					Capital employed as represented by				
	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Coal.....	353	44,946,996	1,101,274	7,069,303	53,117,573	316	47,302,986	1,019,581	7,724,990	56,077,557
Natural gas.....	86	18,709,542	515,382	3,293,491	22,518,415	84	22,489,214	430,437	3,190,735	26,110,386
Petroleum.....	9	4,964,026	190,491	831,089	5,985,606	43	13,869,772	283,052	1,293,586	15,446,410
Clay products.....	7	1,105,934	335,853	347,705	1,789,492	9	1,340,153	358,469	284,749	1,983,371
Sand and gravel.....	3	315,187	832	2,157	318,176	12	323,000	800	2,000	325,800
All other mines..	*7	2,587,307	293,461	125,602	3,006,370	†9	2,428,583	305,370	197,700	2,931,653
<b>Total.....</b>	<b>465</b>	<b>72,628,992</b>	<b>2,437,293</b>	<b>11,669,347</b>	<b>86,735,632</b>	<b>473</b>	<b>87,753,708</b>	<b>2,427,709</b>	<b>12,693,760</b>	<b>102,875,177</b>

\*Includes data for 1 salt well, 1 bituminous sands plant, 2 cement plants, 2 lime plants and 1 stone quarry.

†Includes data for 1 salt well, 2 bituminous sands plants, 2 cement plants, 2 lime plants and 2 stone quarries.

Table 85.—Employees, Salaries and Wages in the Mineral Industry of Alberta, 1925 and 1926

Industry	Average number of employees				Salaries and wages			
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
1925						\$	\$	\$
Coal.....	630	29	8,686		9,345	1,496,981	10,980,196	12,477,177
Natural gas.....	74	18	246		338	176,379	357,213	533,592
Petroleum.....	10	1	122		133	17,794	185,176	202,970
Clay products.....	26	3	252	11	292	63,975	248,726	312,701
Sand and gravel.....	2		103		105	4,260	36,902	41,162
All other mines.....	18	1	244	10	273	25,450	215,302	240,752
Total.....	760	52	9,653	21	10,486	1,784,839	12,023,515	13,808,354
1926								
Coal.....	619	38	8,667		9,324	1,525,006	11,129,594	12,654,600
Natural Gas.....	72	20	248		340	187,652	327,693	515,345
Petroleum.....	43	29	408		480	87,362	564,616	651,978
Clay products.....	27	4	305	10	346	64,866	296,958	361,824
Sand and gravel.....	3		32		35	6,700	33,465	40,165
All other mines.....	21	2	184	1	208	28,270	247,028	275,298
Total.....	785	93	9,844	11	10,733	1,899,856	12,599,354	14,499,210

Table 86.—Wage-Earners in the Mineral Industry of Alberta by Months, 1925 and 1926

Month	1925	1926
January.....	12,407	11,183
February.....	10,900	10,286
March.....	9,176	9,033
April.....	7,497	7,935
May.....	7,086	7,276
June.....	7,725	7,863
July.....	7,493	7,895
August.....	8,306	8,999
September.....	9,779	10,351
October.....	10,598	11,381
November.....	11,588	12,176
December.....	11,803	12,265

Table 87.—Fuel and Electricity Used in the Mineral Industry of Alberta, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	119,365	455,082	140,303	516,678
Lignite coal..... tons	141,325	144,750	137,919	160,830
Fuel oil..... 60		42	264,783	13,862
Gasoline..... Imp. gal.	486	208	6,713	2,061
Gas..... M cu. ft.	521,548	19,897	1,579,336	38,364
Wood..... cords	1,673	6,728	1,737	6,885
Electric power..... K.W.H.	33,012,829	600,196	27,373,401	641,416
Total.....		1,226,903		1,380,096

Table 88.—Power Employed in the Mineral Industry of Alberta, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	292	34,195	318	35,381
Internal combustion engines.....	86	1,661	87	1,650
<i>Total primary power.....</i>	<i>378</i>	<i>35,856</i>	<i>405</i>	<i>37,031</i>
Electric motors run by purchased power.....	474	19,476	514	21,018
<b>Total power employed.....</b>	<b>852</b>	<b>55,332</b>	<b>919</b>	<b>58,049</b>
Electric motors run by primary power in same plant.....	307	9,077	349	9,591
<i>Total electric motors.....</i>	<i>781</i>	<i>28,553</i>	<i>863</i>	<i>30,609</i>
Boilers.....	235	26,619	268	31,364

## BRITISH COLUMBIA

British Columbia, Canada's mountain province, has been associated with mining for many years. It is a province of mountains and valleys, swift running rivers and wide fertile tracts between the main ranges. It has an area of 355,855 square miles in extent, of which 353,416 square miles are land and 2,439 square miles are covered with water.

Broadly speaking there are three mountain systems, the Coast range, on the west, the Columbia system which includes the Cariboo, Selkirk and Purcell ranges in the centre and the Rocky Mountains on the east, the summit of the latter forming the provincial boundary of Alberta and British Columbia as far north as latitude 54°.

In the southerly sections of the province the main rivers are the Fraser, the Columbia and their tributaries, while farther north, the Skeena, the Stikene and the Nass and their tributaries empty into the Pacific ocean. The Peace river, which has its headwaters in the northeastern section, flows in a southeasterly direction and then north to Great Slave lake in Mackenzie district after which it joins the Mackenzie river by way of the Liard, and thence reaches salt water at the Arctic ocean.

Transportation which did so much to open up the southern section of the province when the Canadian Pacific Railway was built, has been greatly augmented in recent years by the construction of the Canadian National Railway to Prince Rupert, the Pacific Great Eastern from Squamish to Prince George, and the Canadian National down through the central sections of the province to tide-water at Vancouver.

In the year 1825 David Douglas, botanist, discovered galena on the eastern shore of Kootenay lake at what is now the Blue Bell mine. Ten years later, coal was found by Dr. W. F. Tolmie, at Fort Rupert, Vancouver Island, and in 1850 the existence of coal at Nanaimo was established by a Mr. J. W. McKay. This deposit was worked by the Hudson's Bay Company under the name of the Nanaimo Coal Company and shipments were made chiefly to San Francisco, California. The first discovery of gold was made at Gold Harbour on the west coast of the Queen Charlotte Islands about the year 1852 and during the same year, gold was found in the Similkameen country. A few years later or between 1855 and 1857 discoveries of gold were made on the Thompson, Fraser and Columbia rivers which precipitated the great Cariboo gold rush of 1858.

In 1861 gold was found on the Lightning and Williams Creeks and in the following year most of the other rich creeks in the Cariboo became known. Williams creek has yielded more gold than any other stream in British Columbia.

As soon as the easily-won gold began to show signs of depletion from the creek bottoms, mining men commenced to prospect for minerals in place and the first recorded production of copper was made in 1888-1889 from the Hall mines near Nelson and this was followed in 1891 by a small shipment of copper ore from Rossland. Other discoveries followed in the Boundary country, in the Slocan, on the coast, and in East Kootenay. Today, British Columbia has in the Sullivan mine the largest lead-zinc mine in the British Empire, leads all other provinces in copper and silver production and stands second in gold.

Coal is the province's most important non-metallic mineral. It is found in abundance on the east coast of Vancouver island, in the southwestern portion of the province, and also to a less extent in small detached basins in the northern section of the province. Other non-metallics produced are quartz, pyrites, fluorspar, natro-alunite, pulpstones, sodium carbonate, talc, iron oxides and gypsum.

As arranged at the time British Columbia joined Confederation, all geological work and mapping is done by the Dominion Government, and parties are sent annually to British Columbia for this purpose. The *Provincial Department of Mines* assists very materially in the opening up and development of prospects and mines. The province is divided into six mining districts, each supervised by a resident engineer, whose duty it is to carry on mineral surveys and to assist prospectors and others with such advice as may be necessary and may come within the scope of a mining engineer's work.

Among the outstanding mines of British Columbia are the Premier mine, a gold and silver property situated at the northerly end of the Portland canal in northern British Columbia, and the Sullivan mine, a rich lead and zinc deposit, at Kimberley in East Kootenay, owned and operated by the Consolidated Mining and Smelting Company of Canada, Limited. Leading copper properties, operated by the Granby Consolidated Mining, Smelting and Power Company of Anyox on the Portland canal in northern British Columbia, and by the Britannia Mining and Smelting Company on Howe Sound, a short distance north of Vancouver, contributed largely to the copper production of the province. Many silver-lead-zinc mines of the Slocan district that have been operated intermittently for a number of years, have been given a new lease of life recently because of the developments in smelter practice at Trail.

The Premier mine was finally brought to the producing stage and into the dividend class by the *American Smelting and Refining Company, Limited*, who acquired the controlling interest in this mine in the fall of 1919.

The Nickel Plate mine at Hedley in the Similkameen Valley is of interest as it is the only property in the province credited as being a producer of arsenic. The ore from this mine is concentrated and cyanided, the concentrates being shipped to Tacoma for treatment. Payment is made for some of the arsenic as well as for the gold content. Gold bullion from this mine is shipped to the Dominion Government Assay Office at Vancouver.

The value of mineral production of British Columbia, amounting to \$65,622,976 in 1926 was greater than that of any other year; it represented 27.3 per cent of the total for Canada and was exceeded only by Ontario.

Lead production at 266,812,461 pounds showed an improvement over 1925 by 10 per cent but the value recorded was less than in the previous year because of a change in method of computing values, as explained in Appendix 1 *Methods of Computing Values* and in Chapter IV in the section on lead.

Zinc output amounted to 137,033,929 pounds worth \$10,154,214 as against 99,152,966 pounds valued at \$7,557,439 in 1925. Copper production at 89,108,017 pounds was greater than the 1925 output by 29 per cent and the silver production of 10,625,816 ounces exceeded the preceding year by 23 per cent. More lead, zinc, copper and silver were produced in British Columbia in 1926 than in any previous year. Gold output was slightly higher than in 1925 but lower than that of 1924. Arsenic which is a by-product of the gold concentrates shipped to Tacoma, by the Nickel Plate mine was less, than in 1925.

The value of coal produced during 1926 was less than in 1925 but about the same as in 1924. Gypsum, pulpstones, pyrites and quartz all showed substantial gains in production over the previous year while iron oxides and sodium carbonate showed a loss. No fluorspar, natro-alunite nor talc was produced in 1926.

The values of clay products, cement, lime and stone all showed gains over 1925 but sand and gravel, though larger in quantity, was less in value than in the previous year.

Capital employed in the mining and smelting industries of British Columbia amounted to \$108,594,954 of which \$87,259,607 was invested in lands, buildings, machinery and tools; \$10,372,803 in supplies and stocks on hand and \$10,962,544 in cash, trading and operating accounts and bills receivable. The 1925 investment totalled \$107,257,567 of which \$85,617,934 was invested in lands, buildings, etc., \$11,469,513 in supplies and stocks on hand, and \$10,170,120 in cash, trading and operating accounts and bills receivable. Of the total for 1926, 10 per cent was invested in gold mines, 9 per cent in copper-gold-silver mines, 14.5 per cent in silver-lead-zinc mines, 29.6 per cent in coal mines, and the remainder among the metallurgical works and smaller mining industries of the province.

Employment was given to 14,566 people whose salaries and wages amounted to \$21,556,415. There were 944 people on salary who were paid \$2,131,510 and 13,622 wage-earners who received \$19,424,905 in wages during the year.

Coal mining gave employment to 5,332 people, silver-lead-zinc mining 2,259, copper-gold-silver mining 2,180, metallurgical works 2,926, and the remainder were engaged in the clay products industries, cement plants, lime kilns, stone quarries, gravel pits, and other lesser mining operations.

The cost of fuel and electric power used in 1926 amounted to \$4,913,255 of which \$1,325,831 was paid for bituminous coal, \$1,054,479 for coke, and \$2,191,465 for electric power. Fuel oil valued at \$177,490 and minor quantities of anthracite coal, lignite coal, gasoline, gas and wood were also used. Of the total coal consumed nearly one-half was used by coal mines, and the greater part of the remainder by silver-lead-zinc mines, smelters, and cement plants. Metallurgical industry used more than 72 per cent of the total electric power, though substantial quantities were utilized by the copper-gold mines, the silver-lead-zinc mines and the coal mines.

Primary power equipment consisted of 178 stream engines rated at 32,415 h.p.; 66 internal combustion engines rated at 4,060 h.p.; and 74 hydraulic turbines or water wheels with a capacity of 42,595 h.p. There were 1,231 motors with a rated capacity of 87,079 h.p. running on purchased power and 817 motors rated at 38,762 h.p. running on power generated by the establishment. Boilers with a rated capacity of 18,637 h.p. numbered 155.

Table 89.—Value of Mineral Production of British Columbia, 1899-1926

Year	Value	Year	Value
	\$		\$
1899.....	12,482,605	1913.....	28,086,312
1900.....	16,680,526	1914.....	24,164,039
1901.....	20,531,833	1915.....	28,689,425
1902.....	17,448,031	1916.....	39,969,962
1903.....	17,899,147	1917.....	36,141,926
1904.....	19,325,174	1918.....	42,935,333
1905.....	22,386,008	1919.....	34,865,427
1906.....	25,299,600	1920.....	39,411,728
1907.....	25,656,056	1921.....	33,230,460
1908.....	23,704,035	1922.....	39,423,962
1909.....	22,479,006	1923.....	43,737,388
1910.....	24,478,572	1924.....	52,298,533
1911.....	21,299,305	1925.....	64,485,242
1912.....	30,076,635	1926.....	65,622,976

Table 90.—Mineral Production of British Columbia, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>METALLICS—</b>		\$		\$		\$
Arsenic..... lb.	495,250	19,768	1,277,696	16,978	1,019,200	11,262
Copper..... lb.	65,451,246	8,524,370	69,221,600	9,720,097	89,108,017	12,292,450
Gold..... fine oz.	245,719	5,079,462	219,227	4,531,824	225,866	4,669,065
Iron, pig, from Canadian ore..... tons	14	350				
Lead..... lb.	168,467,628	13,652,617	242,454,502	22,111,850	266,812,461	18,012,509
Platinum..... fine oz.	5	569	6	715	50	4,258
Silver..... fine oz.	8,153,003	5,444,657	8,579,458	5,925,403	10,625,816	6,599,376
Zinc..... lb.	96,000,069	6,090,244	99,152,966	7,557,439	137,033,929	10,154,214
<b>NON-METALLICS—</b>						
Coal..... tons	2,193,667	10,601,998	2,742,252	11,720,373	2,613,719	10,612,915
Fluorspar..... tons			3,874	19,034		
Grindstones, pulpstones..... tons	240	19,000	481	27,781	700	45,116
Gypsum..... tons	30	150	240	865	20,916	156,964
Iron oxides..... tons	120	2,620	133	2,740	108	920
Natro-alumite..... tons			20	1,000		
Pyrites..... tons	8,091	40,459	2,670	13,350	3,374	16,870
Quartz..... tons	21,358	43,034	853	2,262	6,466	77,060
Sodium carbonate..... tons	510	5,173	1,120	8,140	595	5,370
Talc..... tons	165	3,630	92	1,589		
<b>CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS—</b>						
Cement..... brl.		1,240,331	485,185	1,151,344	544,863	1,239,018
Clay products.....		460,594		523,931		592,495
<b>Lime—</b>						
Quicklime..... bush.	517,577	320,312	515,058	304,223	503,033	317,733
Hydrated..... tons	4,157	50,517	4,718	60,212	7,896	99,149
Sand and gravel..... tons		344,937	1,415,232	446,896	1,486,254	357,985
Stone..... tons	178,225	353,741	256,226	337,196	253,061	358,247
<b>Total.....</b>		<b>52,298,533</b>		<b>64,485,242</b>		<b>65,622,976</b>

Table 91.—Net Income from Sales from the Mineral Industry of British Columbia, 1925 and 1926. (Quantities shown are final shipments during the year: except as noted, values given are those reported as received f.o.b. shipping point.)

	1925		1926	
	Quantity	Value	Quantity	Value
<b>GOLD MINING INDUSTRY—</b>		\$		\$
Crude bullion..... fine oz.	37,991	399,305	57,209	525,052
Ore..... tons	118,436	3,310,444	127,068	2,097,631
Concentrates..... tons	9,291	817,329	21,614	1,376,462
Slags and residues..... tons	3	1,692		1,080
Dry ore and precipitates..... tons	52	78,357	962	96,045
<b>Total for gold mining industry.....</b>		<b>4,607,127</b>		<b>4,096,270</b>
<b>ALLUVIAL GOLD MINING INDUSTRY—</b>				
Crude bullion, including gold, silver and platinum..... fine oz.	16,479	274,523	20,962	352,435
<b>COPPER-GOLD-SILVER MINING INDUSTRY—</b>				
Ore..... tons	828,806	2,106,149	664,751	2,406,239
Concentrates..... tons	118,331	5,361,369	164,577	7,234,994
Slags and residues..... tons		39,107	220	25,900
Tailing sands..... tons	153	9,486	56	5,895
<b>Total for copper-gold-silver mining industry.....</b>		<b>7,477,004</b>		<b>9,673,028</b>
<b>SILVER-LEAD-ZINC MINING INDUSTRY—</b>				
Lead ore..... tons	33,952	1,860,599	64,696	2,646,294
Lead concentrates..... tons	164,428	11,988,836	170,313	12,799,797
Zinc ore..... tons	886	39,107	52,507	982,358
Zinc concentrates..... tons	158,755	5,927,178	174,265	6,957,948
Dry ore..... tons	1,009	14,761	5,938	152,559
<b>Total for silver-lead-zinc mining industry.....</b>		<b>19,830,481</b>		<b>23,538,956</b>
<b>METALLURGICAL WORKS....—</b>				
Smelter and refinery sales, less estimated cost of ores, etc., treated.....		8,085,842		9,520,480
(Products: Gold, silver, refined copper, blister copper, copper sulphate, lead, zinc and base bullion.)				
<b>Total:—</b>				
(a) Metal mining and metallurgical works listed above.....		<b>40,274,977</b>		<b>47,181,169</b>
(b) Non-metal mining industries as per Table 90.....		<b>11,797,134</b>		<b>10,915,215</b>
(c) Clay products and other structural materials as per Table 90.....		<b>2,825,802</b>		<b>2,964,627</b>
<b>Grand total.....</b>		<b>54,895,913</b>		<b>61,061,011</b>

\* In this item the "output value" of coal, instead of "sales value" has been included.

Table 92.—Principal Statistics of the Mineral Industry of British Columbia, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates, coal, and other minerals shipped from mines smelters and quarries
			\$		\$	\$	\$
1922.....	246	267	85,600,408	11,680	17,121,493	2,097,615	34,083,724
1923.....	153	163	97,357,573	12,105	19,913,678	3,682,428	38,612,899
1924.....	159	194	107,611,494	12,422	19,876,613	3,770,384	48,231,578
1925.....	161	193	107,257,567	13,727	21,440,904	4,801,665	54,895,913
1926.....	226	272	108,594,954	14,566	21,556,415	4,913,255	61,061,011

Table 93.—Number of Plants and Capital Employed in the Mineral Industry of British Columbia by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Capital employed as represented by					Capital employed as represented by				
	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash, trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Alluvial gold.....						28	505,668	975	6,568	513,211
Auriferous quartz						12	9,265,342	488,081	816,645	10,570,068
Copper-gold-sil-										
ver.....	11	8,759,124	486,009	1,091,776	10,336,909					
Silver-lead-zinc...	12	11,231,364	1,354,271	1,721,321	14,306,956	21	8,343,600	325,636	847,381	9,516,617
Coal.....	86	5,775,632	658,466	2,751,499	9,185,597	115	11,082,253	641,789	3,843,832	15,567,874
Clay products....	39	6,474,850	768,744	1,743,582	32,987,176	33	29,138,472	802,609	2,146,252	32,087,333
Lime.....	8	785,862	125,676	59,261	970,799	12	838,399	121,075	71,182	1,030,656
Sand and gravel..	3	935,190	32,193	123,348	1,090,731	3	1,002,481	51,598	119,360	1,173,439
Stone.....	4	618,686	745	38,544	657,975	9	1,012,471	4,455	16,320	1,033,246
All other mines	12	487,685	49,565	28,935	566,185	19	459,340	46,881	34,272	540,493
and smelters...										
<b>Total.....</b>	<b>*18</b>	<b>26,549,541</b>	<b>7,993,844</b>	<b>2,611,854</b>	<b>37,155,239</b>	<b>†20</b>	<b>25,611,581</b>	<b>7,889,704</b>	<b>3,060,732</b>	<b>36,562,017</b>
	<b>193</b>	<b>85,617,934</b>	<b>11,469,513</b>	<b>10,170,120</b>	<b>107,257,567</b>	<b>272</b>	<b>87,259,607</b>	<b>10,372,803</b>	<b>10,962,544</b>	<b>108,594,954</b>

\*Includes data for 1 quicksilver mine, 2 smelters, 1 talc mine, 2 iron oxides mines, 1 grindstone quarry, 1 quartz mine, 1 iron pyrites mine, 1 fluorspar mine, 1 natro-alunite deposit, 3 sodium carbonate deposits, 1 cement plant and 3 gypsum quarries.

†Includes data for 2 smelters, 5 gypsum mines, 2 iron oxide mines, 1 grindstone quarry, 2 quartz quarries, 1 cement plant, 2 iron pyrites mines, and 5 sodium carbonate properties.

Table 94.—Employees, Salaries and Wages in the Mineral Industry of British Columbia, 1925 and 1926

Industry	Average number of employees				Total	Salaries and wages		
	Salaried employees		Wage-earners			Salaries	Wages	Total
	Male	Female	Male	Female				
1925						\$	\$	\$
Alluvial gold.....			25		25		39,876	39,876
Auriferous quartz.....	70	2	628	2	702	175,243	1,040,485	1,215,728
Copper-gold-silver.....	118	13	1,730		1,861	291,507	2,699,298	2,990,805
Silver-lead-zinc.....	117	3	1,840		1,960	241,627	2,897,338	3,138,965
Coal.....	265	21	5,336		5,622	604,494	7,199,205	7,893,699
Clay Products.....	18	1	193	1	213	38,913	228,913	267,826
Lime.....	8	2	110		120	17,252	103,808	121,060
Sand and gravel.....	10		71		81	25,618	103,520	129,138
Stone.....	11	3	206		220	27,989	204,652	232,641
All other mines and smelters	242	20	2,661		2,923	607,333	4,803,833	5,411,166
Total.....	859	65	12,800	3	13,727	2,119,976	19,320,928	21,440,904
1926								
Alluvial gold.....	6		92		98	14,089	90,635	104,724
Auriferous quartz.....	84	2	643	3	732	164,219	1,155,748	1,319,967
Copper-gold-silver.....	111	8	2,042	19	2,180	288,912	2,907,463	3,196,375
Silver-lead-zinc.....	137	4	2,103	15	2,259	307,855	3,135,628	3,443,483
Coal.....	217	20	5,095		5,332	569,789	6,544,118	7,113,907
Clay-products.....	21	2	307		330	43,142	266,432	309,574
Lime.....	9	3	132		144	16,497	123,588	140,085
Sand and gravel.....	11	1	72		84	25,866	95,514	121,380
Stone.....	12	1	166		179	28,100	184,837	212,937
All other mines and smelters.	275	20	2,933		3,228	673,041	4,920,942	5,593,983
Total.....	883	61	13,585	37	14,566	2,131,510	19,424,905	21,556,415

Table 95.—Wage-Earners in the Mineral Industry of British Columbia, by Months, 1925 and 1926

Month	1925	1926
January.....	12,069	12,732
February.....	12,063	12,686
March.....	11,995	12,692
April.....	11,986	12,568
May.....	11,610	13,013
June.....	12,217	13,077
July.....	12,395	12,925
August.....	12,543	13,272
September.....	12,802	13,358
October.....	12,944	13,775
November.....	12,882	13,680
December.....	12,741	13,036

Table 96.—Fuel and Electricity Used in the Mineral Industry of British Columbia, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	16	193	482	3,981
Bituminous coal..... tons	318,220	1,365,990	316,848	1,325,831
Lignite coal..... tons			45	360
Coke..... tons	102,847	1,122,768	102,525	1,054,479
Fuel oil..... Imp. gal.	3,062,845	242,258	2,310,660	177,490
Gasoline..... Imp. gal.	64,323	21,321	88,047	22,582
Gas..... M cu. ft.	257,077	44,552	364,725	50,886
Wood..... cords	17,205	57,626	26,453	86,181
Other fuel.....		2,933		
Electric power..... k.w.h.	364,278,182	1,944,024	497,867,269	2,191,465
<b>Total.....</b>		<b>4,801,665</b>		<b>4,913,255</b>

Table 97.—Power Employed in the Mineral Industry of British Columbia, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	173	32,225	178	32,415
Internal combustion engines.....	49	2,371	66	4,060
Hydraulic turbines and water wheels.....	70	42,089	74	42,595
<i>Total primary power.....</i>	<i>292</i>	<i>77,285</i>	<i>318</i>	<i>79,070</i>
Electric motors run by purchased power.....	1,013	76,237	1,231	87,079
<b>Total power employed.....</b>	<b>1,305</b>	<b>153,522</b>	<b>1,549</b>	<b>166,149</b>
Electric motors run by primary power in same plant.....	847	42,043	817	38,762
<i>Total electric motors.....</i>	<i>1,860</i>	<i>118,280</i>	<i>2,048</i>	<i>125,841</i>
Boilers.....	144	17,475	155	18,637

## THE YUKON

The Yukon Territory lies in the extreme northwest section of the Dominion of Canada. Immediately to the west is Alaska, and on the east, the Mackenzie district, while the province of British Columbia is adjacent to the greater part of its southern boundary. Alaska was originally owned by Russia, and it comprised that territory lying west of the present Yukon Territory, and a section of the western coast down as far as a long narrow inlet known as the Portland Canal. Russia claimed the north Pacific coast down to latitude 51° N, but in the treaty of 1824 the boundary was fixed at 54° 40' N, and in the following year a treaty was concluded by which Russia relinquished to Great Britain her claim, not only to the region below 54° 40' N, but also to the vast interior occupied by the Hudson's Bay Company up to the frozen ocean. In 1825, the southern and western boundaries of the British possessions were established, but owing to certain ambiguity, the boundary between what are now British Columbia and Alaska, was not very well established. In 1867, Alaska was purchased from Russia by the United States. In the summer of 1896, alluvial gold was found in the Yukon District, and immediately a section of the North American continent which up to this time had been considered of little economic value, became the cause of serious controversy between Canada and the United States because of the doubt as to the proper location of the boundary line of Alaska. Finally, the question was settled in 1903 by the award of the *Alaska Boundary Tribunal*.

The main rivers of this territory are the Peel, the Porcupine, the Yukon and its tributaries such as the White river, the Stewart river and the Pelly. Dawson City, which had a population of 9,142 during the gold boom, is occupied now by 975 people. There is one railroad, the White Pass and Yukon, which runs from Skagway, Alaska, northerly to White Horse. From there, passengers embark on the river boats and go down the Yukon river to Dawson City. The railroad was constructed along the route most travelled during the days in which the early prospectors were entering the territory.

When the news of the wonderful gold discoveries reached the outside world, men from all walks of life flocked to this new district, and the stories of the hardships of the life have been told in prose and verse by Robert W. Service, a young bank clerk who lived through the days when Dawson City was at its height.

Between 1898 and 1905 upwards of \$100,000,000 in gold was taken from the gravels of Bonanza, Eldorado, Hunker, Dominion and Sulphur Creeks and their tributaries. Many of the famous creek claims on Bonanza and Hunker are now being worked by the dredging process, and the terraces of the equally famous White Channel are being washed down by hydraulic methods.

Since 1905, production of gold has gradually decreased; in 1919, the output was valued at about \$1,900,000 and in 1926 at \$529,000. Although there are a great many individual miners, the report of their production is not very extensive and the greater part of the gold is recovered by large hydraulic or dredging companies; five such companies report annually.

Of late years, the Mayo district on the Stewart river has come into prominence because of the silver-lead ore discovered there. The ore is mined under difficult climatic conditions, and is taken down to the river and piled there ready for transportation to the smelters when navigation opens. Because of the high cost entailed in shipping this ore to the smelter, only high-grade material can be transported economically, and in order to prepare lower grade ore for shipping the Treadwell Yukon Mining Company, Limited, has constructed a concentrator where custom ore as well as their own is treated.

Other economic minerals such as copper and antimony are known to occur but up to the present time there has been no report of production.

Among the non-metallic minerals, coal is the only one of any importance and it is known to occur in the Yukon in at least eighteen distinct areas. In thirteen of these, coal of economic importance has been discovered. The production, however, has been small, partly because there has been little demand for coal and partly because only very few of the properties are conveniently situated for shipping purposes.

Silver production, almost all of which was recovered from the silver-lead mines of the Mayo district, although small quantities are obtained in association with alluvial gold, amounted to \$1,301,159 or 58.5 per cent of the total mineral production of the territory for the year and represented an increase of 108 per cent over that of 1925. Lead output at \$395,634 was greater than that of the previous year; gold production at \$529,220 was only 53.8 per cent of the total for 1925 and the output of coal was less also.

Capital employed amounted to \$6,560,124, one-third of which was invested in silver-lead mines, and two-thirds in alluvial mining. There were 375 people reported as being employed in mining who were paid \$578,958. Of these, 188 consisting of 20 salaried employees and 168 wage-earners were working at silver-lead mining and coal mining and received \$343,841 for their services; 187 found work in alluvial gold operations and were paid \$235,117 in salaries and wages. There were other alluvial miners who worked individual claims but it was found very difficult to get returns from all of them as they are men of no fixed post office address.

Fuel consumed was valued at \$254,474 nearly half of which was spent for electric power; fuel oil valued at \$59,625, gasoline at \$41,515, wood at \$37,563 and coal, a large part of which was blacksmith's coal worth \$2,870, was also used.

Primary power equipment consisted of one steam engine rated at 100 h.p. and 7 internal combustion engines with a total capacity of 413 h.p. There were 20 motors rated at 213 h.p. run by primary power made by the same plant. The boilers numbered 6 with a combined rating of 189 h.p.

Table 98.—Value of Mineral Production of the Yukon, 1907-1926\*

Year	Value	Year	Value
	\$		\$
1907.....	3,335,898	1917.....	4,482,202
1908.....	3,669,290	1918.....	2,355,631
1909.....	4,032,678	1919.....	1,940,934
1910.....	4,764,474	1920.....	1,576,726
1911.....	4,707,432	1921.....	1,764,955
1912.....	5,933,242	1922.....	1,785,573
1913.....	6,276,737	1923.....	2,672,823
1914.....	5,418,185	1924.....	952,812
1915.....	5,057,708	1925.....	1,791,641
1916.....	5,491,610	1926.....	2,226,813

\* Prior to 1907 the mineral production of the Yukon was included with the provinces of Manitoba, Saskatchewan and Alberta.

Table 99.—Production of Gold of the Yukon, 1885-1926

Year	Fine ounces (*)	Value	Year	Fine ounces (*)	Value	Year	Fine ounces (*)	Value
		\$			\$			\$
1885	4,837	100,000	1899	774,000	16,000,000	1913	282,838	5,846,780
1886			1900	1,077,553	22,275,000	1914	247,940	5,125,374
1887	3,386	70,000	1901	870,750	18,000,000	1915	230,173	4,758,098
1888	1,935	40,000	1902	701,437	14,500,000	1916	212,700	4,396,900
1889	8,466	175,000	1903	592,594	12,250,000	1917	177,667	3,672,703
1890	8,466	175,000	1904	507,938	10,500,000	1918	102,474	2,118,325
1891	1,953	40,000	1905	381,001	7,876,000	1919	90,705	1,875,039
1892	4,233	87,500	1906	270,900	5,600,000	1920	72,778	1,504,455
1893	8,514	176,000	1907	152,381	3,150,000	1921	65,994	1,364,217
1894	6,047	125,000	1908	174,150	3,600,000	1922	54,456	1,125,705
1895	12,094	250,000	1909	191,565	3,960,000	1923	60,144	1,243,287
1896	14,513	300,000	1910 (a)	221,091	4,570,362	1924	34,825	719,897
1897	120,937	2,500,000	1911	224,197	4,634,574	1925	47,817	988,465
1898	483,750	10,000,000	1912	268,447	5,549,296	1926	25,601	529,220
<b>Total.....</b>							<b>8,793,247</b>	<b>181,772,197</b>

(\*) Calculated from the value: one dollar=0.048375 ounces.

(a) Including a small production from lode mines, from 1910 to 1923 inclusive.

Table 100.—Mineral Production of the Yukon, 1924-1926

Product	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>METALLICS—</b>						
Gold.....fine oz.	34,825	719,897	47,817	988,465	25,601	529,220
Silver.....fine oz.	226,755	151,429	904,893	624,964	2,095,027	1,301,159
Lead.....lb.	903,520	73,221	1,875,442	171,040	5,860,373	395,634
<b>NON-METALLICS—</b>						
Coal.....tons	1,121	8,265	730	7,172	316	800
<b>Total.....</b>		<b>952,512</b>		<b>1,791,641</b>		<b>2,226,813</b>

Table 101.—Net Income from Sales of Products, from the Mineral Industry of the Yukon, 1925 and 1926 (Quantities shown are final shipments during the year: Values given are those reported as received f.o.b. shipping point)

Industry and Product	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
<b>ALLUVIAL GOLD MINING INDUSTRY—</b>				
Crude bullion.....fine oz.	59,771	795,896	31,680	527,451
Total for alluvial gold mining industry.....fine oz.	59,771	795,896	31,680	527,451
<b>SILVER-LEAD-ZINC MINING INDUSTRY—</b>				
Lead ore.....tons	616	120,648	2,617	262,152
Lead concentrates.....tons	1,292	614,184	2,729	860,217
Total for silver-lead-zinc mining industry.....tons	1,908	734,832	5,346	1,222,369
<b>Total:—</b>				
(a) Metal mining industries listed above.....		1,530,728		1,749,820
(b) Non-metal mining industries as per Table 100.....		7,172		800
<b>Total.....</b>		<b>1,537,900</b>		<b>1,750,620</b>

Table 102.—Principal Statistics of the Mineral Industry of the Yukon, 1922-1926

Year	Number of active operators	Number of operating mines and alluvial claims	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Net value of bullion, ore, concentrates, and coal shipped from the mines
			\$		\$	\$	\$
1922.....	123	123	11,991,914	482	803,117	39,975	1,571,719
1923.....	144	1,474	13,095,474	469	804,761	131,745	2,124,702
1924.....	92	1,409	24,491,850	391	666,603	117,846	785,675
1925.....	101	1,422	24,456,425	462	527,090	171,627	1,737,900
1926.....	85	1,156	6,560,124	375	578,958	254,474	1,750,620

Table 103.—Number of Plants and Capital Employed in the Mineral Industry of the Yukon, by Classes and by Industries, 1925 and 1926

Industry	1925					1926				
	Capital employed as represented by					Capital employed as represented by				
	Number of plants	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total	Number of plant	Cost of lands, buildings, machinery and tools	Cost of supplies and stocks on hand	Cash trading and operating accounts and bills receivable	Total
		\$	\$	\$	\$		\$	\$	\$	\$
Silver-lead and coal mines.....	*3	1,979,545	274,926	306,285	2,560,756	*5	1,820,127	276,835	273,565	2,370,527
Alluvial mines.....	1,419	20,988,402	288,937	618,330	21,895,669	1,151	100,000	170,687	3,918,910	4,189,597
Total.....	1,422	22,967,947	563,863	924,615	24,456,425	1,156	1,920,127	447,522	4,192,475	6,560,124

\* Includes data for 1 coal mine.

Table 104.—Employees, Salaries and Wages in the Mineral Industry of the Yukon, 1925 and 1926

Industry	*Average number of employees				Salaries and wages		
	Salaried employees		Wage earners	Total	Salaries	Wages	Total
	Male	Female	Male				
1925					\$	\$	\$
Silver-lead and coal mines.....	9	1	114	124	25,759	193,759	219,518
Alluvial mines.....			338	338		307,572	307,572
Total.....	9	1	452	462	25,759	501,331	527,090
1926							
Silver-lead and coal mines.....	18	2	168	188	41,875	301,966	343,841
Alluvial mines.....	4		181	187	20,000	215,117	235,117
Total.....	22	4	349	375	61,875	517,083	578,958

\*See note page 30.

Table 105.—Wage-Earners in the Mineral Industry of the Yukon, by Months, 1925 and 1926

Month	1925	1926
January.....	429	143
February.....	431	151
March.....	443	157
April.....	446	229
May.....	452	275
June.....	457	318
July.....	451	313
August.....	450	320
September.....	461	309
October.....	458	266
November.....	470	226
December.....	460	178

Table 106.—Fuel and Electricity Used in the Mineral Industry of the Yukon, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	27	135	26	2,870
Fuel oil..... Imp. gal.	94,830	55,582	105,206	59,625
Gasoline..... Imp. gal.	33,447	37,091	41,071	41,515
Wood..... cords	609	16,059	2,226	37,563
Electric power..... .kw.h.	772,620	62,760	5,268,725	112,901
<b>Total.....</b>		<b>171,627</b>		<b>254,474</b>

Table 107.—Power Employed in the Mineral Industry of the Yukon, 1925 and 1926

Kind	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	1	100	1	100
Internal combustion engines.....	6	368	7	413
<i>Total primary power.....</i>	<i>7</i>	<i>468</i>	<i>8</i>	<i>513</i>
Electric motors run by purchased power.....				
<b>Total power employed.....</b>	<b>7</b>	<b>468</b>	<b>8</b>	<b>513</b>
Electric motors run by primary power in same plant.....	17	250	20	213
<i>Total electric motors.....</i>	<i>17</i>	<i>250</i>	<i>20</i>	<i>213</i>
Boilers.....	3	190	6	189

## CHAPTER THREE

## THE GOLD MINING INDUSTRY IN CANADA

(With tables showing the production of gold.)

1. General Review.
2. Reviews of the Gold Mining Industry in Canada by Areas.
3. The Alluvial Gold Mining Industry.
4. The Auriferous Quartz Mining Industry.
5. The Copper-Gold-Silver Mining Industry.
6. Commodity Statistics—including tables showing production by provinces, imports, exports, and world output of gold.

## 1. General Review

(a) *Definition of the Industry.*—Canada's gold mining industry falls naturally into two main divisions: the winning of placer gold, or the "Alluvial Gold Mining Industry," and the recovery of free-milling gold from auriferous quartz mines, described under the title "The Auriferous Quartz Mining Industry." But in the treatment of ores containing metals other than gold in commercial values, such as copper and silver, gold is often recovered as a by-product; in making up production figures, gold obtained from the treatment of Canadian ores of every kind, is included in the total. Most of the other lode mines producing gold in quantity are included in the group entitled "Copper-Gold-Silver Mining Industry."

(b) *Historical.*—During the early history of the industry in Canada (1850-1890), most of the gold produced was obtained from placer deposits in the province of British Columbia. Later, in 1898, the famous Yukon placers were discovered, and for some time these deposits constituted the principal source of Canada's gold. Recent developments in lode mining, however, have somewhat overshadowed the placer workings; as the placer yields declined, lode gold recoveries increased until they became the principal source of supply. During the past ten or eleven years the province of Ontario has come to the front as a gold-producer, through the development of the rich gold quartz mines of the Porcupine and Kirkland Lake districts; the output from British Columbia mines has been fairly constant for several years; new fields, such as the Rouyn area of Quebec, with its large deposits of gold-bearing copper ore and various sections of northern Manitoba continue to attract the attention of the mining world.

(c) *Sources.*—In 1926 the auriferous quartz mines yielded 87 per cent of the total production; alluvial deposits provided 2 per cent; Canadian copper and lead smelters recovered 4 per cent, and gold obtained by foreign smelters in the treatment of Canadian ores of various kinds, amounted to 7 per cent of the total Dominion production of gold.

(d) *Importance of the Industry.*—Among Canada's mineral products, gold holds second place in point of value, being surpassed only by coal. In 1926, gold represented 15 per cent of the total value of Canada's mineral output.

Steady progress, too, has been made by Canada as a world producer, and for the past five years, Canada has held third place; the Union of South Africa and the United States continue to hold first and second place, respectively. South Africa production provides more than half the world's output, while Canada produces more than three-quarters as much as the United States and more than twice as much as Australia or South America and one and one-half times as much as the continent of Asia.

## 2. Reviews of the Gold Mining Industry by Areas

## NOVA SCOTIA

Gold, obtained mostly from free-milling ores, and partly from gold-bearing ores containing arsenic, continued to be one of Nova Scotia's important items of mineral production from about 1862 until 1903 and during these years many deposits were worked, the annual yields varying from 6,863 fine ounces in 1862 to 30,348 fine ounces in 1902, with an average production of possibly 20,000 ounces each year. In 1904, production dropped to 10,362 ounces,

and the output held around this figure until 1910; since then there has been no appreciable revival in production and in 1926 the total output was only 1,678 ounces.

Nova Scotia possesses a large number of small gold lodes in quartzites and slates of Precambrian age. In places these yield very rich ore. They have been worked irregularly during the past sixty years and have made a total production little short of \$19,000,000.

Several of these mines have been recently re-opened. There is renewed interest in the region and further activity may be expected. Hydro-electric power is now available in most parts of the province.

#### QUEBEC

So far, Quebec has not been a great producer of gold or gold-bearing ores, but recent work in the Rouyn field indicates that in the near future, this province will become of much more importance as a producer of metals, including gold, than it has ever been in the past. In reviewing the situation in Quebec, the fact that the ores of the Rouyn area are largely copper-gold, with some containing zinc as well, makes it necessary to consider the problem in connection with the production in other provinces from similar ores; this is done in the section on the "Copper-Gold-Silver Industry."

Suffice it to say, here, that the production of gold in recent years from Quebec ores, has been recovered from silver-lead-zinc ores, usually exported for treatment.

#### ONTARIO

Ontario, with its rich mines in the Porcupine and Kirkland Lake areas, continues to hold the lead among the gold-producing provinces, contributing 85.2 per cent of the total gold production for Canada in 1926. In the same year Ontario's gold output represented 36.5 per cent of the aggregate value of the mineral production for the province.

Some idea of the phenomenal growth in gold mining in Ontario may be had from the facts that in 1903 the gold output of the province totalled only 9,096 ounces, or 1 per cent of the, Canadian aggregate for this metal; in 1913, the output of 219,801 ounces made up 27.4 per cent of Canada's total production; while in 1926, as already noted, Ontario's share at 1,497,215 ounces, represented 85.2 per cent of the total gold produced from Canadian ores.

In 1926, there were in the Porcupine area, nine producing mines of importance, headed by the Hollinger, now one of the world's greatest mines. The others in order of their production values were: Dome, McIntyre, Vipond, Consolidated West Dome Lake, Ankerite, Night Hawk Peninsular, Porcupine Paymaster and March Gold.

Gold production from the Porcupine area amounted to 1,145,564 fine ounces or 76 per cent of the total for the province. To the end of 1926 the aggregate yield of gold from the Porcupine area reached a value of more than \$184,000,000.

Kirkland Lake, Ontario's second most important gold-producing area, discovered in 1911 and more actively developed since 1919, yielded 342,798 fine ounces in 1926. Lake Shore, Teck-Hughes and Wright-Hargreaves are the three principal producers. Others of importance in this camp are: Tough Oakes Burnside, Argonaut, Kirkland Lake and the Barry Hollinger of the Boston Creek camp, in addition to which there are many smaller properties being developed.

The immediate outlook is for further increase in the production of gold. Mines at present producing are steadily increasing the capacity of their mills, enlarging the operations of their mines and acquiring additional property. Hydro-electric power plants have been increased and the supply is now sufficient for enlarged operations.

Several deposits within the area of the Porcupine and Kirkland Lake camps, although not producing, are being vigorously developed and may be expected to add to the general output. Discoveries of gold ores, made from time to time in many parts of this province also add greatly to the probability of increased production.

Late in 1925 some apparently important discoveries of gold were made following some earlier efforts, near Red Lake in the district of Patricia, Ontario. This place is near the Manitoba boundary line more than 100 miles north of the National Transcontinental Railway line and

somewhat less distance east of Bull Dog lake in Manitoba. Several leading gold mining companies became seriously interested in the district and exploration work was carried on in 1926. Attention had already been called to the locality by the Geological Survey over thirty years ago and more recently by the Ontario Bureau of Mines. Geologically, the area is a Precambrian complex. Keewatin lavas and later sediments (conglomerate and slate) are intruded by granite and porphyry. Quartz veins occur, and lavas in contact with quartz porphyry intrusions are characteristically altered.

The knowledge and experience gained in the successful development of gold mining in Ontario during the past thirteen or fourteen years is now leading to re-examination of many localities that were unsuccessfully opened at earlier times especially those along the main line of the Canadian Pacific Railway north of the Great Lakes and in the district of the Lake of the Woods. The Goudreau and Michipicoten areas are among those which are receiving renewed attention. Well-known mining companies are engaged in exploration and development work and results so far obtained are reported as promising.

The producing gold deposits of Ontario occur under somewhat uniform conditions but with local variations. All are in the rock of Precambrian age and the principal producing deposits are associated with acid intrusives of Algoman age in volcanic or sedimentary rocks of earlier age.

#### PRAIRIE PROVINCES

Manitoba, Saskatchewan and Alberta—The major part of the settled portions of the prairie provinces, Alberta, Saskatchewan and Manitoba, is underlain by rocks of sedimentary origin and of comparatively late age. It is, therefore, not likely to contain deposits of the precious metals. Alluvial gold is found in the Saskatchewan river in Alberta, but its recovery has not been found profitable.

The northeastern part of each of these provinces, however, occupies a portion of the Laurentian plateau which is underlain by rocks of Precambrian age and in many places is favourable for the occurrence of gold or other valuable minerals.

In Alberta the Precambrian area is small, about 5,000 square miles, and as yet no gold occurrences have been reported from it. In Saskatchewan, it occupies about one-third of the province and in Manitoba it is still larger, comprising perhaps two-thirds of that province.

Near the margin of the Precambrian, adjacent to the Manitoba-Saskatchewan boundary, is an area known as The Pas district, in which gold, along with copper and pyrites, is found over a wide area, in bodies, some of which are large. A small amount of gold was recovered from some rich copper ores that were mined for a time at the Mandy mine in this district. Free milling gold was also mined for a time at the Rex mine, in the Herb or Wekusko lake district, eighty miles northeast of the Pas.

Other deposits of both classes of ore are found in the region and have received more or less development. Enormous deposits of copper-bearing pyrite at Flin Flon, one hundred miles north of The Pas also have an appreciable gold content; the property has been under investigation for some years and the prospects of its being worked soon are very favourable.

In Manitoba, east of Lake Winnipeg, prospecting has been carried on for as long as ten years. Numerous occurrences of free gold have been more or less developed in the vicinity of Rice, Gold, and Long Lakes, and more recently at Bull Dog Lake, near the Ontario boundary line. Intensive work was carried on in the Long and Bull Dog lake areas throughout 1925 by strong mining companies of successful experience; the outlook is hopeful for an important mining camp.

Geological conditions are broadly similar to those of other parts of the Precambrian complex in which gold is found.

#### BRITISH COLUMBIA

British Columbia, holding second place among the gold-producing provinces, contributes about 13 per cent of the Dominion total for this metal, but most of this yield is obtained from the smelting of ores in which other metals predominate. In the early days, placer production from the Cassiar and Cariboo districts was of greater importance than it has been in recent years. From 1858 to 1892 yields from the placer deposits of British Columbia made up the

entire production of gold from the province; in 1895 the recovery from gold lode deposits was greater than from the placers. In 1926 placer gold production represented only 7 per cent of the total; gold from milling ores made up 11 per cent; gold obtained in the smelting of gold-bearing ores, treated primarily for other metals, constituted 29 per cent; and gold in similar ores exported for treatment made up the balance or 53 per cent.

In lode mining the Portland Canal division furnishes a large production of gold. In 1926 it yielded more than 62 per cent of the gold output of the province. This district includes the Premier mine. Osoyoos, Skeena, Vancouver, Nass River, Atlin, Trail Creek and Nelson divisions follow in importance. The deposits of Portland Canal, Vancouver, Trail, Skeena and Nass are complex ores, which are important for their content of silver or base metals as well as for gold.

The gold lodes of British Columbia are either in or associated with igneous rock, especially where these invade rocks of earlier age. Such conditions obtain over vast areas along the border of the Coast range and also in other parts of the province. Since the main geological features are on a large scale and the province is but sparsely inhabited, it follows that many such zones of contact that are favourable for the occurrence of minerals of value, are still little known in detail over great distances. Consequently the province offers a field for prospecting that is of great magnitude and promise and increased production may be looked for with confidence.

### YUKON

Still holding third place among Canada's gold-producing geographical divisions, Yukon Territory produced 25,601 ounces of fine gold in 1926 from placer gold recoveries. Following the discovery of placer gold in the Yukon in 1896, there was a great rush to this new field and the placer gold output from the Territory increased enormously in the next few years reaching a maximum in 1900 when the yield totalled more than a million ounces of fine gold. For a few years, production continued on a large scale but by 1908 the annual output had dropped to about 174,000 fine ounces. Lode mining was undertaken in a small way about 1910, but production from this source never reached very great proportions. During the years 1909 to 1913 there was once more a steady upward trend due to increased placer workings. In the following year a recession set in, and the output has shown a continual shrinkage year by year, from 1914 until 1925, when there was again a slight upward turn to production; the output amounted to 47,817 fine ounces as compared with a total of 34,825 fine ounces for 1924, but in 1926 it receded again to 25,601. There were 5 companies and approximately 75 individual operators working placer deposits in the Yukon in 1926. During the year, work was done on 120 miles of ditches and the quantity of material handled was estimated as 2,501,200 cubic yards. In crude placer gold, about 80 per cent of the weight is fine gold, 18 per cent silver, and 2 per cent, base metal or material of no value.

### (3) The Alluvial Gold Mining Industry

It is very difficult to secure complete information on placer mining in Canada since placer fields are mostly remote and except in a few cases are operated by small numbers of men of no fixed abode. Dredging and hydraulicking companies operating in the Yukon Territory send annual returns to the Bureau and with the aid of the *Mining Lands Branch*, Department of Interior, under whose regulations, mining is carried on in this territory, more definite information is obtainable. The report of the Gold Commissioner, Dawson, Yukon Territory, regarding mining for the year ending March 31, 1927, is as follows:—

#### REPORT OF THE GOLD COMMISSIONER, DAWSON, YUKON TERRITORY, REGARDING MINING

**PLACER GOLD MINING.**—The amount of placer gold mined during the year on which royalty export tax was paid was 33,166.94 ounces, which was a decrease from the previous year, export tax having been paid on 58,654.60 ounces in 1925-1926.

**Yukon Gold Company.**—This company did not carry on as extensive operations as in previous years. They performed considerable representation work, thereby renewing 157 placer claims and Hydraulic Mining Lease No. 9 standing in their name. The sum of \$50,153.50 was expended in connection with this work.

*Burrall and Baird, Limited.*—This company operated Dredge *Canadian No. 2* on Hydraulic Mining Lease No. 18, below Bear Creek camp. Dredging was discontinued on December 29, and during the season 1,371,485 cubic yards of gravel and bedrock were dredged.

A thawing plant with a capacity of two and one-half million yards during the season was installed by this company. Three Keystone drills drilled three hundred and fifty-eight holes to bedrock. These were spaced seventy-five feet apart. In each a two-inch pipe was placed before the casing was withdrawn. Connections were made with a line of hydraulic pipe through which water was pumped at a pressure of twenty-five pounds. The water was furnished by four electrically driven pumps and the maximum flow during the season was thirteen thousand gallons per minute. Drilling commenced on April 1, and closed on September 15. Pumping commenced on May 9, and was suspended on October 10. Two and one-half million yards were thawed.

The Government road from Dawson to Bear Creek had been constructed through Hydraulic Mining Lease No. 18 on frozen ground, immediately adjoining the thawed section. The thawed ground paralleling this had been dredged for several miles and in order to operate Dredge *Canadian No. 2* during the past season it was necessary to change the location of the road. A new highway was built by the company, which branches from the old road at the mouth of Bonanza creek and runs along the extreme left limit of the Klondike valley to a point opposite Quigley gulch, thence it crosses the valley for a distance of fourteen hundred feet and again connects with the old road. The total length of the new section is three and one-half miles. Work was commenced on April 1, and completed on August 7. This road was accepted by myself and the Yukon Council and permission given to dredge the old roadbed.

The machine shop at Bear Creek, the electric and oxy-acetylene welding shop, the electric repair shop and a car repair shop were operated throughout the season and took care of the entire repair work of this company and The New North West Corporation, Limited, and its subsidiaries.

From April 1 to November 30, an average of 50 men was employed.

The sum of \$3,009.00 was paid by this company as royalty export tax on gold mined during the year.

*The New North West Corporation, Limited.*—This company and its subsidiaries, the Dominion Mining Company, Limited; the Big Creek Mining Company, Limited; the Calder Mining Company, Limited; and the Sulphur Mining Company, Limited, carried on extensive operations during the past season.

The North Fork power plant was operated continuously throughout the year and generated a total of 9,372,420 K.W.H. Power was furnished to Burrall and Baird, Limited, to operate its dredge and other enterprises; to the Dominion Mining Company, Limited, and the Big Creek Mining Company, Limited, for all their varied operations; to the Dawson Electric Light and Power Company, Limited, for lighting the city of Dawson; and to The Dawson City Water and Power Company, Limited, to pump and heat the water furnished the city. The sixty miles of transmission lines connecting the power plant with several sub-stations were maintained in an efficient state of repair.

Dredge *North West No. 1* commenced digging on June 20 on Creek Claim No. 2 above Lower Discovery, on Dominion creek, and closed down on November 6, on Creek Claim No. 5. Four hundred and thirty-five thousand one hundred and eleven cubic yards of material were dredged during the season, of which 70 per cent was frozen and had to be thawed by artificial means. A thawing plant of sixteen hundred points was operated and the water furnished by two electrically driven pumps, which supplied six thousand gallons per minute under a pressure of approximately thirty pounds at the points.

Dredge *North West No. 2* commenced work on May 3 on Creek Claim No. 240 below Lower Discovery, on Dominion creek, and closed down on November 18 on Creek Claim No. 241, having dredged 677,084 cubic yards, all of which was frozen and had to be thawed with water points. One thousand points were operated in this section and for the greater portion of the season the water was furnished entirely from the ditches constructed under Water Grants Nos. 9024 and 9026. At times this was supplemented by the output from an electrically operated pump which supplied three thousand gallons per minute. The ditches mentioned above were continually patrolled throughout the working season and maintained in good repair.

An average of sixty men was employed from April 1 to November 30.

The sum of \$5,281.00 was paid by this company as royalty export tax on gold mined and shipped during the year.

This company and its subsidiaries swore in assessment work and took out renewal grants on 952 placer claims.

*Other Placer Operations.*—In addition to what may be termed the large scale operations referred to above, many individuals and miners working in partnership, were engaged in placer mining throughout the various parts of the Territory, and, on the whole, had a successful season.

*LODE MINING.—Dawson District.*—The Lone Star Mine, on Victoria gulch, has continued development work, but no ore was shipped during the year.

A large number of claims on the Indian River conglomerate and on the Twelvemile river are being kept in good standing, but very little real development work is being done.

A new discovery of argentiferous galena has been made near the mouth of the Fifteenmile river, and about seventy claims have been recorded. It is hoped to have an examination of this deposit made during the coming summer by an officer of the Geological Survey. It is, of course, too early to have any idea of the value of this discovery. Considerable development work has, however, been done on the Camp Bird, one of the original claims, but no definite vein has yet been located.

*Mayo District.*—Keno Hill still continues to be the principal producer in this district, although considerable ore has also been shipped from Galena and Sourdough Hills.

The principal operator this year, as last, has been the Treadwell Yukon Company, Limited, who have mined some 40,000 tons of ore. The company's mill, in addition to treating its own ore, has also treated a large quantity for individual miners in the vicinity. This has been of very great service to the smaller operators.

The Settlemier and Bormingham properties have been leased and the lessee has taken out about 1,400 tons. A number of other claims on the north side of the hill have also entered the producing class and have shipped a fair quantity of high grade.

A small initial tonnage has been shipped from the Gordon and Johnson properties on Sourdough hill.

Altogether the outlook for these three hills is bright.

A representative of the Consolidated Mining and Smelting Company of Canada, Limited, of Trail, B.C., returned again to the Beaver district and has taken a number of options on claims in that area and has a crew of men at work prospecting.

The Territorial Assayer at Keno has, as usual, been kept busy and has made a large number of assays for miners in various portions of the territory. This service is given free.

The outlook for lode mining in this territory has never been more encouraging than at the present time. The new discoveries on the Yukon river are stimulating prospecting in the Dawson district, and it is hoped that some new producers will soon be brought in that locality. The recent serious fall in the prices of silver and lead has caused a heavy loss to the miners of those metals, but it is hoped that the bottom has been reached. A rise of prices to anything like their former level would add enormously to the operators' profits, and would bring in a large area which would not pay to work at present prices.

In 1926 arrangements were made with the Department of Mines of British Columbia whereby the annual mining returns were collected by the province and forwarded to the Bureau of Statistics. This method enabled the Bureau to get reports from a larger number of small operators than was previously possible, more particularly with regard to alluvial gold mining.

Nearly all the alluvial gold recovered in 1926 in British Columbia was obtained from the Atlin, Cariboo and Quesnel Mining Divisions. The Cariboo division output was increased by a larger production from the Antler creek dredge of the Kafue Copper Development Company

and in the Quesnel division, the Cedar Creek Mining Company made a much larger output than in 1925. Development and testing of alluvial properties was actively carried on in many parts of the province during 1926 particularly in Atlin, Liard, Cariboo, Quesnel and Similkameen divisions.

Records show that in 1926 there were 108 concerns, including individual operators, engaged in winning gold from the placers of the Yukon Territory and British Columbia. Wage-earners to the number of 273 were employed and payments, in wages, totalled \$339,841. Gold recoveries amounted to 52,592 crude ounces, valued at \$875,628. Of this amount, 31,680 crude ounces were produced in the Yukon and 20,912 crude ounces, in British Columbia. In addition, 50 ounces of platinum valued at \$4,258 were recovered in alluvial operations on the Tulameen river. The quantity of material handled amounted to 3,738,290 cubic yards, of which 2,501,200 yards were handled in the Yukon and 1,237,090 in British Columbia. The length of ditches in operation was 157 miles.

**Table 108.—Principal Statistics of Alluvial Gold Mining in Canada, 1925 and 1926**

Item	Yukon		British Columbia		Canada	
	1925	1926	1925	1926	1925	1926
Number of firms and individual operators†..	98	80	*	28	*	108
Time in operation..... months	6-8	6-8	6-8	6-8	6-8	6-8
Capital employed..... \$		4,189,597	*	513,211	*	4,702,808
Number of employees.....	363	187	*	98	*	285
Salaries and wages paid.....	347,448	235,117	*	104,724	*	339,841
Power employed..... k.w.h.	*	4,408,520	*	*	*	4,408,520
	\$	44,085	*	*	*	44,085
Crude gold recovered (containing gold, silver, etc.)..... crude oz.	76,250	31,680	16,476	20,912	92,726	52,592
Value of gold and silver..... \$	1,270,419	527,451	274,523	348,177	1,544,942	875,628
Platinum recovered..... crude oz.			6	50	6	50
Value of platinum recovered..... \$			715	4,258	715	4,258
Quantity of material handled..... cubic yd.	3,103,892	2,501,200	*	1,237,090		3,738,290
Length of ditches..... miles	120	120	*	37		157
Total value of alluvial gold production..... \$	1,270,419	527,451	275,238	352,435	1,545,657	879,886

\*Not available.

†In addition to the number shown in the table there were a number of individual operators from whom no records were obtainable.

#### 4. The Auriferous Quartz Mining Industry

In 1926 there were 60 auriferous quartz mines operating in Canada, and of these, 30 produced bullion or shipped ores while 30 carried on development work only. There were 38 mines operating in Ontario, 12 in British Columbia, 7 in Nova Scotia and 3 in Manitoba. The corresponding data for 1925 were: Ontario, 36; British Columbia, 11; Nova Scotia, 4; and Manitoba, 1. Ontario mines produced over 91 per cent of the total gold recovered from the auriferous quartz mines of Canada.

Ore mined totalled 4,031,035 tons of which 3,888,041 tons were put through the mills and 3,705,978 tons were cyanided. About 165,120 crude ounces were recovered by amalgamation and 1,793,472 crude ounces by cyanidation. Shipments of bullion, having a total value of \$31,527,873 amounted to 1,961,276 crude ounces containing 1,517,758 fine ounces of gold and 265,593 fine ounces of silver. Ores and residues and high-grade slags shipped to smelters were valued at \$3,644,333.

The total capital employed in this industry in Canada in 1926 amounted to \$103,945,022 as against \$84,964,062 in the previous year. Of this total approximately 89 million dollars was invested in Ontario and about 10.5 million dollars in British Columbia. There was also a small amount reported as invested in gold mines in Nova Scotia and Manitoba.

Salaries and wages paid in 1926 amounted to about 12.3 million dollars as against 11.9 million dollars in 1925. Employees in operating mines numbered 7,663; of these, 504 were on

salary, 2,013 were wage-earners working on surface, 4,453 worked underground and 693 were employed in the concentrators. Of the total number employed, 6,677 worked in Ontario gold mines, 732 in British Columbia, 151 in Nova Scotia and 103 in Manitoba.

Gold production in Canada during 1926 was the greatest of any year on record, and with the increase in milling capacity; the development of prospects into mines, improved mechanical equipment and the increase in the metallurgical knowledge concerning the treatment of gold ores, there is little doubt that Canada's gold production will continue to show steady growth.

**Table 109.—Principal Statistics of the Auriferous Quartz Mining Industry in Canada, 1922-1926**

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net value of bullion, ore, concentrates or residues shipped from the mines
			\$		\$	\$	\$	\$
†1922.....	79	79	35,368,094	5,441	8,011,682	7,383,516	353,453	26,120,210
1923.....	65	65	77,574,976	5,524	8,961,434	5,661,661	1,497,197	25,021,837
1924.....	70	70	83,982,765	6,738	10,500,140	6,925,027	1,559,406	31,298,107
1925.....	52	52	84,964,062	7,052	11,931,948	*	1,836,050	35,035,361
1926.....	60	60	103,945,022	7,662	12,340,623		2,083,811	35,171,561

†For 1922 cost of electricity is included with miscellaneous expenses.

\*For 1925 and 1926 data not available.

**Table 110.—Capital Employed by Provinces in the Auriferous Quartz Mining Industry in Canada, 1925 and 1926**

—	Nova Scotia		Quebec		Ontario		Manitoba		British Columbia		Canada	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
1925												
Producing.....	4	99,150	.....	.....	13	58,757,165	1	124,069	9	10,283,075	27	69,263,459
Operating but not producing.....	.....	.....	.....	.....	23	15,646,769	.....	.....	2	53,834	25	15,700,603
<b>Total.....</b>	<b>4</b>	<b>99,150</b>	.....	.....	<b>36</b>	<b>74,403,934</b>	<b>1</b>	<b>124,069</b>	<b>11</b>	<b>10,336,909</b>	<b>52</b>	<b>84,964,062</b>
1926												
Producing.....	3	45,000	.....	.....	18	71,366,445	.....	.....	9	10,335,757	30	81,747,202
Operating but not producing.....	4	662,594	.....	.....	20	17,597,118	3	3,703,797	3	234,311	30	22,197,820
<b>Total.....</b>	<b>7</b>	<b>707,594</b>	.....	.....	<b>38</b>	<b>88,963,563</b>	<b>3</b>	<b>3,703,797</b>	<b>12</b>	<b>10,570,068</b>	<b>60</b>	<b>103,945,022</b>

Table 111.—Ores Mined and Milled, Crude Bullion Produced and Shipped from the Auriferous Quartz Mines in Canada, by Provinces, 1925 and 1926

	Nova Scotia	Ontario	Manitoba	British Columbia	Canada
1925					
Number of producing mines.....	4	13	1	9	27
Ore mined..... tons	9,842	3,400,973	7,132	228,513	3,646,460
Ore milled..... tons	9,593	3,394,924	7,132	118,372	3,527,021
Bullion recovered by amalgamation..... crude oz.	1,715	168,174	4,946	6,680	181,515
Ores cyanided..... tons		3,358,234		100,217	3,458,451
Bullion recovered by cyanidation..... crude oz.		1,682,592		31,311	1,713,903
Bullion shipped..... crude oz.	1,644	1,850,466	4,946	37,991	1,895,047
Contents of bullion shipped—Gold..... fine oz.	1,564	1,457,023	4,300	19,407	1,482,294
Silver..... fine oz.	75	251,830	446	2,163	254,514
Value..... \$	32,342	30,224,456	89,210	399,305	30,745,313
Net value of ores, slags and residues sold..... \$		83,420	1,644	4,207,822	4,292,856
Amount of exchange discount..... \$		2,838			2,838
<b>Total net receipts..... \$</b>	<b>32,342</b>	<b>30,305,038</b>	<b>90,854</b>	<b>4,607,127</b>	<b>35,035,361</b>
1926					
Number of producing mines.....	3	18		9	30
Ore mined..... tons	9,662	3,700,261		321,112	4,031,035
Ore milled..... tons	9,612	3,686,597		191,832	3,888,041
Bullion recovered by amalgamation..... crude oz.	214	147,741		17,165	165,120
Ores cyanided..... tons		3,657,078		48,900	3,705,978
Bullion recovered by cyanidation..... crude oz.		1,753,477		39,995	1,793,472
Bullion shipped..... crude oz.	1,625	1,902,442		57,209	1,961,276
Contents of bullion shipped—Gold..... fine oz.	1,529	1,490,964		25,265	1,517,758
Silver..... fine oz.	77	248,352		17,164	265,593
Value..... \$	31,638	30,971,183		525,052	31,527,873
Net value of ores, slags and residues sold..... \$		73,115		3,571,218	3,644,333
Amount of exchange discount..... \$		645			645
<b>Total net receipts..... \$</b>	<b>31,638</b>	<b>31,043,653</b>		<b>4,096,270</b>	<b>35,171,561</b>

Table 112.—Ores, Concentrates and Slags Shipped from the Auriferous Quartz Mines in Canada, 1925 and 1926

Item	British Columbia mines shipping		Canada*
	To Canadian smelters	To Foreign smelters	
1925			
Number of mines.....	6	4	13
Tons of ore, etc., shipped.....	29,285	98,497	128,653
Metal content—			
Gold..... oz.	20,509	107,132	131,142
Silver..... oz.	414,035	2,088,538	2,506,591
Copper..... lb.	633	180	345,741
Lead..... lb.	1,300	870,971	872,271
Arsenic..... lb.		1,277,696	1,277,696
Net value..... \$	659,208	3,548,614	4,292,886
1926			
Number of mines.....	3	7	9
Tons of ore, etc., shipped.....	52,419	97,225	150,522
Metal content—			
Gold..... oz.	29,890	103,573	135,193
Silver..... oz.	715,508	2,490,093	3,206,520
Copper..... lb.			360,093
Lead..... lb.	690,967	528,033	1,219,000
Zinc..... lb.	1,201,134	41,250	1,242,384
Arsenic..... lb.		1,019,200	1,019,200
Net value..... \$	766,961	2,804,257	3,644,333

\*Includes total for 3 mines in Ontario and 1 mine in Manitoba 1925, and for 2 mines in Ontario in 1926.

**Table 113.—Employees' Salaries and Wages in the Auriferous Quartz Mining Industry in Canada by Provinces, 1925 and 1926**

Province	1925						1926					
	Number of employees					Salaries and wages	Number of employees					Salaries and wages
	On salary	Wage-earners			Total employees		On salary	Wage-earners			Total employees	
		Sur-face	Under-ground	Mill				Sur-face	Under-ground	Mill		
						\$						\$
Nova Scotia.....	2	23	20	4	49	24,809	6	71	68	6	151	107,971
Ontario.....	368	1,536	3,845	499	6,248	10,634,273	403	1,649	4,032	593	6,677	10,740,890
Manitoba.....	3	23	22	5	53	57,138	9	54	40	.....	103	171,795
British Columbia.....	72	289	259	82	702	1,215,728	86	239	313	94	732	1,319,967
Canada.....	445	1,871	4,146	590	7,052	11,931,948	504	2,013	4,453	693	7,663	12,340,623

**Table 114.—Wage-Earners in the Auriferous Quartz Mining Industry in Canada by Months, 1925 and 1926**

Month	1925				1926			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Under-ground			Surface	Under-ground		
January.....	1,624	3,766	544	5,934	1,727	4,364	577	6,668
February.....	1,536	3,831	549	5,916	1,749	4,340	599	6,688
March.....	1,560	3,963	562	6,085	1,857	4,329	615	6,801
April.....	1,652	4,008	556	6,216	1,791	4,403	630	6,824
May.....	1,708	4,050	577	6,335	1,857	4,307	641	6,805
June.....	1,785	4,200	589	6,574	1,921	4,314	666	6,901
July.....	1,826	4,195	570	6,591	1,868	4,273	682	6,823
August.....	1,792	4,139	567	6,498	1,969	4,296	687	6,952
September.....	1,800	4,087	581	6,468	2,020	4,269	694	6,983
October.....	1,844	4,231	598	6,673	2,111	4,376	673	7,160
November.....	1,704	4,221	616	6,541	2,036	4,402	668	7,106
December.....	1,635	4,117	588	6,340	1,981	4,358	646	6,985

\*See note on page 30.

**Table 115.—Fuel and Electricity Used in the Auriferous Quartz Mining Industry in Canada 1925 and 1926**

Kind	Unit of measure	1925		1926	
		Quantity	Value	Quantity	Value
		No.	\$	No.	\$
Bituminous coal.....	tons	23,262	236,287	28,193	293,298
Anthracite coal.....	tons	950	17,324	990	19,997
Coke.....	tons	461	6,757	459	8,973
Gasoline.....	Imp. gal.	36,671	11,161	62,341	25,455
Oil (fuel).....	Imp. gal.	861,061	87,927	1,369,836	120,069
Wood.....	cords	11,666	62,525	15,747	67,910
Gas.....	M cu. ft.	.....	.....	.....	.....
Other fuel.....	.....	.....	208	.....	957
Electric power.....	K.W.H.	160,192,738	1,413,861	169,287,220	1,547,152
<b>Total.....</b>			<b>1,836,050</b>		<b>2,083,811</b>

Table 116.—Power Employed in the Auriferous Quartz Mining Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers rating	Number of units	Total h.p. according to manufacturers rating
Steam engines and turbines.....	21	1,570	18	1,165
Gas engines.....	4	226	5	44
Oil and gasoline engines.....	25	2,666	43	5,601
Hydraulic turbines or water wheels.....	16	7,541	12	4,411
<i>Total primary power.....</i>	<i>66</i>	<i>12,003</i>	<i>78</i>	<i>11,221</i>
Electric motors operated by purchased power.....	653	37,583	889	47,036
<b>Total power employed.....</b>	<b>724</b>	<b>49,586</b>	<b>967</b>	<b>58,257</b>
Electric motors operated by primary power in same plant.....	96	3,271	110	4,741
<i>Total electric motors.....</i>	<i>754</i>	<i>40,854</i>	<i>999</i>	<i>51,777</i>
Boilers.....	60	4,265	62	4,636

## 5. The Copper-Gold-Silver Mining Industry

### CANADA

The copper-gold-silver mining industry comprises a group of mines producing ore containing gold, silver and copper, in which the copper values predominate. The largest mines and the greatest number of this type are located in British Columbia; Manitoba is known to have big ore reserves of copper awaiting adequate transportation and smelting conditions; Ontario has several small properties of this class, but they are mostly idle. In the province of Quebec the Eustis mine is at present the only producing property in this group, but recent developments in the section of the province adjacent to Ontario bid fair to make Quebec an outstanding copper-gold producer in the very near future. British Columbia is the largest copper-producing province in the Dominion.

### QUEBEC

In the province of Quebec the only producer of copper in 1926 was the Eustis mine, situated south of Sherbrooke. The ore there is an admixture of iron pyrites and chalcoppyrite carrying  $2\frac{1}{2}$  to 3 per cent copper and a high proportion of sulphur. All the ore is crushed and by means of selective flotation the sulphide ore is separated into (1) a copper concentrate containing practically all the copper; (2) a sulphur concentrate containing over 50 per cent sulphur, and (3) gangue.

It is the new Rouyn district in northwestern Quebec that will bring this province to the fore as a copper producer. Since 1924 much prospecting and development work has been done and the results, obtained, especially on the Horne mine of the Noranda Mines, Limited, have warranted the construction of a smelter. The smelter will also treat customs ores. Construction work began early in 1926 and it is expected that the smelter will start operation late in the autumn of 1927.

Because of interplant relations, some companies do not find it possible to separate the capital invested in mines from that invested in their smelting operations. The Granby Consolidated is one of these and the total capital employed by this company has been credited in the chapter on "Non-Ferrous Smelting and Refining," in which total also the capital employed by the Consolidated Mining and Smelting Company in their smelter at Trail has been included, but the amounts invested in different mining properties have been accounted for separately, some in the

copper-gold-silver group and some in the silver-lead-zinc group. With these limitations, the capital employed in the copper-gold-silver industry in 1926 amounted to approximately \$28,000,000 of which over \$18,420,000 was invested in the province of Quebec, and \$9,500,000 in British Columbia. Shipments of ores and concentrates from the copper-gold-silver mines in Canada amounted to 850,000 tons, valued at \$9,973,049. Shipments to foreign smelters amounted to 133,924 tons valued at \$5,189,283. Shipments to Canadian smelters amounted to 716,013 tons having a value of \$4,783,766. These shipments of concentrates and ores were reported to contain 40,563 fine ounces of gold 760,463 fine ounces of silver, and 96,752,337 pounds of copper; in addition to 7,343 tons of sulphur which was exported in the form of pyrite concentrates from the Eustis mine in Quebec.

Salaries and wages paid in the industry amounted to \$4,546,493 and employees numbered 3,403 persons. Of the wage-earners, 1,413 were employed on the surface, 1,400 underground and 331 in the mills. Bituminous coal, coke, gasoline, oil, etc., consumed in the industry during the year cost over \$149,000 and the electric power used was valued at slightly less than \$400,000. Power equipment employed exclusive of boilers numbered 471 units having a total rating of 35,281 h.p.

#### ONTARIO

There are no operating copper-gold-silver mines in Ontario at the present time but much prospecting and development work is being carried on in the new Kamiscotia area north of Timmins. Almost all the copper production credited to Ontario production occurs with the nickel ores of the Sudbury District.

#### BRITISH COLUMBIA

At the present time this province produces two-thirds of the Canadian output of copper; the Britannia mine on Howe Sound, and the Hidden Creek mine on the Portland Canal, owned and operated by the Granby Consolidated Mining and Smelting Company, Limited, are the two principal producers, though in 1926 the Allenby Copper Company, also owned by the Granby Consolidated, was a large producer of copper concentrates from the property near Princeton, B.C.

Concentrates from the Britannia mine are shipped to the smelter at Tacoma, Washington; the Hidden Creek ore and concentrates are smelted by the Granby smelter at Anyox, and the concentrates from the Allenby mine are shipped to the Consolidated Mining and Smelting Company, Limited, at Trail, B.C.

The Britannia mine is situated a short distance up the coast from Vancouver. The group of claims comprising the "Britannia Mineral Belt" was staked in 1898 but it was not until 1911 after much financing and re-financing and development that this property was made a mine. In that year the output was 118,900 tons of ore which contained approximately 46,000 ounces of silver and 8,685,000 pounds of copper. In 1926—1,187,632 wet tons of ore were drawn from the mine and 1,192,197 wet tons or 1,156,470 dry tons were milled. Broken ore reserves in the stopes amounted to 1,358,415 tons and the total reserves, including the broken reserve, amounted to 6,649,556 tons. Production amounted to 33,117,388 pounds of copper, 10,472 ounces of gold and 163,444 ounces of silver. The mill treated an average of 3,177 dry tons per milling-day, the copper concentrate being shipped to the Tacoma smelter at Tacoma, Washington, U.S.A.

At the Hidden Creek property of the Granby Consolidated Mining, Smelting and Power Company, situated on the Portland Canal, 1,211,619 tons of ore, were raised in 1926, an increase of about 40,000 tons over the total for 1925. Of this, 604,398 tons were smelted at the company's Anyox smelter, and 602,015 tons were milled, producing 52,840 tons of concentrates. Of the concentrates 19,569 tons were smelted at the company's own smelter and 33,271 tons were sent to Tacoma. The total production of the Hidden Creek mines during 1926 was 7,316 ounces gold, 393,206 ounces silver and 38,686,513 pounds of copper. In addition to the above, shipments were made by the Outsider mine operated by the Granby Consolidated on the Portland Canal to the smelter and from the Golskeish Mines, Limited.

Another property which has come into prominence is the Allenby Copper Company which was merged with the Granby Consolidated on October 1, 1926. The first development work performed on these claims, which are situated on Copper Mountain near Princeton and Allenby, was done under option by the British Columbia Copper Company of Greenwood in 1905. The option was dropped because of the difficulty at that time in the direct smelting of ores containing a high percentage of alumina. Several options were taken later and re-organization and re-financing were resorted to in order to develop the mine and build a concentrator. In October, 1920, the mine and mill commenced operations only to close down in December of the same year as it was then found unprofitable to operate because of the lowered price of copper.

There was no production in 1921 and 1922 and the old Canada Copper Corporation was absorbed by the Allenby Copper Company in the interests of the Granby Consolidated. No extensive work was done until 1925 when further alterations were made to the mill; in 1926 the Consolidated Mining and Smelting Company reported having received 31,844 tons of dry concentrates from the property.

The Belmont Surf Inlet mine which had been operating from 1916 closed down, and the plant was dismantled, in June, 1926, because of depleted ore bodies.

Table 117.—Principal Statistics of the Copper-Gold-Silver Mining Industry in Canada, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed (a)	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net value of ore, concentrates, etc., shipped by mines
			\$	\$	\$	\$	\$	\$
1922 (b).....	18	18	6,519,516	826	1,150,275	385,493	77,231	2,031,671
1923.....	14	14	19,108,072	1,790	3,004,292	726,613	334,696	4,361,486
1924.....	15	15	19,099,845	2,118	3,292,228	1,855,511	366,153	5,226,859
1925.....	40	41	23,200,580	2,374	3,555,844	(c)	413,767	7,758,990
1926.....	76	84	27,936,685	3,403	4,546,493	(c)	541,914	9,973,049

(a) Capitalization of Granby Consolidated which includes the Hidden Creek mine included under metallurgical works.  
(b) For 1922 the cost of electricity is included with miscellaneous expenses.  
(c) No data available.

Table 118.—Capital Employed in the Copper-Gold-Silver Mining Industry in Canada, 1925 and 1926

	British Columbia				Quebec				Canada			
	1925		1926		1925		1926		1925		1926	
	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$	No.	\$
Producing mines....	8	.....	18	.....	1	.....	2	.....	9	15,667,403	20	11,078,460
Operating but not producing mines..	4	.....	3	.....	28	.....	61	.....	32	7,533,177	64	16,858,225
Total.....	12	14,306,956	21	9,516,617	29	8,893,624	63	18,420,068	41	23,200,580	84	27,936,685

Table 119.—Shipments from the Copper-Gold-Silver Mines of Canada, 1925 and 1926

Destination	Quantity	Net value	Content as determined by settlement assay			
			Gold	Silver	Copper	Sulphur
	tons	\$	fine oz.	fine oz.	pounds	tons
<b>1925</b>						
7 mines shipped to Canadian smelters—						
Ores.....	828,806	2,106,149	17,465	358,736	28,863,739	.....
*Concentrates.....	23,468	511,738	330	26,366	4,883,476	6,125
4 mines shipped to foreign smelters—						
Ores.....	113,180	5,141,103	44,606	182,657	39,942,730	.....
Concentrates.....						
<b>Total.....</b>	<b>965,454</b>	<b>7,758,990</b>	<b>62,401</b>	<b>567,759</b>	<b>73,689,945</b>	<b>6,125</b>
<b>1926</b>						
11 mines shipped to Canadian smelters—						
Ores.....	664,746	2,405,568	14,567	364,564	28,401,619	.....
*Concentrates and slags.....	51,267	2,378,198	4,406	172,496	23,546,484	.....
6 mines shipped to foreign smelters—						
Ores.....	5	671	.....	142	6,377	.....
Concentrates and slags.....	133,919	5,188,612	21,590	223,261	44,797,857	7,343
<b>Total.....</b>	<b>849,937</b>	<b>9,973,049</b>	<b>40,563</b>	<b>760,463</b>	<b>96,752,337</b>	<b>7,343</b>

\*Includes 12,250 tons of sulphur concentrates containing 50% sulphur in 1925 and 14,100 tons in 1926 shipped from the Eustis mine in Quebec province.

Table 120.—Employees, Salaries and Wages in the Copper-Gold-Silver Mining Industry in Canada, 1925 and 1926

	1925			1926		
	Number of employees		Salaries and wages	Number of employees		Salaries and wages
	Male	Female	\$	Male	Female	\$
<b>SALARIED EMPLOYEES—</b>						
Total.....	194	17	416,065	244	15	530,079
<b>WAGE-EARNERS—</b>						
Surface.....	1,108	.....	3,139,779	1,725	19	4,016,414
Underground.....	1,055	.....	.....	1,400	.....	.....
Total.....	2,163	.....	3,139,779	3,125	19	4,016,414
<b>Total.....</b>	<b>2,357</b>	<b>17</b>	<b>3,555,844</b>	<b>3,369</b>	<b>34</b>	<b>4,546,493</b>

Table 121.—\*Wage-Earners in the Copper-Gold-Silver Mining Industry in Canada by Months; 1925 and 1926

Month	1925				1926			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Under-ground			Surface	Under-ground		
January.....	657	1,203	129	1,989	756	1,363	295	2,414
February.....	674	1,087	136	1,897	808	1,306	294	2,408
March.....	665	1,071	139	1,875	816	1,314	334	2,464
April.....	688	954	142	1,784	881	1,307	338	2,526
May.....	711	912	178	1,801	937	1,341	326	2,604
June.....	758	939	240	1,937	1,246	1,354	328	2,928
July.....	777	936	246	1,959	1,383	1,293	336	3,012
August.....	791	956	263	2,010	1,378	1,359	336	3,073
September.....	817	1,012	268	2,097	1,481	1,334	333	3,148
October.....	827	1,058	265	2,150	1,470	1,392	358	3,220
November.....	807	1,124	260	2,191	1,372	1,407	330	3,109
December.....	769	1,173	274	2,216	1,203	1,295	315	2,813

\*See note page 30.

Table 122.—Fuel and Electricity Used in the Copper-Gold-Silver Mining Industry in Canada, 1925 and 1926

Kind	Unit of measure	1925		1926	
		Quantity	Value	Quantity	Value
		No.	\$	No.	\$
Bituminous coal.....	tons	6,834	63,132	6,627	56,387
Anthracite coal.....	tons	6	90	115	1,840
Coke.....	tons	128	1,342	100	1,100
Gasoline.....	Imp. gal.	19,105	6,799	26,949	9,586
Oil (fuel).....	Imp. gal.	420,784	29,759	369,444	21,927
Wood.....	cords	10,943	51,190	11,857	58,335
Other fuel.....			49		31
Electric power.....	k.w.h.	55,141,056	261,406	72,724,546	392,708
<b>Total.....</b>			<b>413,767</b>		<b>541,914</b>

Table 123.—Power Employed in the Copper-Gold-Silver Mining Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	7	1,286	9	1,455
Gas engines.....			3	100
Oil and gasoline engines.....	10	287	7	245
Hydraulic turbines or water wheels.....	15	10,700	9	10,450
<i>Total primary power.....</i>	<i>32</i>	<i>12,273</i>	<i>28</i>	<i>12,250</i>
Electric motors operated by purchased power.....	192	11,678	353	19,705
<b>Total power employed.....</b>	<b>224</b>	<b>23,951</b>	<b>386</b>	<b>31,955</b>
Electric motors operated by primary power in the same plant.....	176	8,532	85	3,326
<i>Total electric motors.....</i>	<i>368</i>	<i>20,210</i>	<i>443</i>	<i>23,031</i>
Boilers.....	36	2,576	32	2,266

Commodity Statistics, Including Tables Showing Production, Imports, Exports and World Output of Gold.

**Production.**—Canada's gold production in 1926 again established a new high record of, 1,754,228 fine ounces which valued at the standard rate of \$20.671834 per fine ounce was worth \$36,263,110 as against the 1925 production of 1,735,735 fine ounces worth \$35,880,826.

Gold produced in 1926 was derived from (a) alluvial deposits, 42,074 ounces; (b) gold obtained from milling ores, 1,518,381 ounces; (c) gold obtained in Canadian smelters from the treatment of copper and lead ores, 65,717 ounces, and (d) gold estimated as recoverable from various ores and concentrates exported, 128,056 ounces. The corresponding figures for 1925 were: (a) 60,998 ounces; (b) 1,479,095 ounces; (c) 46,442 ounces, and (d) 149,200 ounces.

The production of gold by provinces was: Nova Scotia, 1,678 ounces or 0.09 per cent of the total for Canada; Quebec, 3,680 ounces or 0.20 per cent; Ontario, 1,497,215 ounces or 85.40 per cent; Manitoba, 188 ounces or 0.01 per cent; British Columbia, 225,866 ounces or 12.85 per cent; Yukon, 25,601 ounces or 1.45 per cent. Comparing the production by provinces in 1926, with the corresponding totals for 1925, it may be noted that there was a slight increase in Nova Scotia; Quebec doubled its production of the previous year; Ontario increased the high yield of 1925 by 36,776 ounces; Manitoba production was very small, but there was a considerable amount of development work done. British Columbia reported more than 6,600 ounces above the total for the previous year. The Yukon total was somewhat lower owing to the decreased activities in placer-mining operations there.

Table 124.—Production of Gold from Canadian Sources, 1858-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1858.....	34,104	705,000	1882.....	60,288	1,246,268	1906.....	556,415	11,502,120
1859.....	78,129	1,615,072	1883.....	53,853	1,113,246	1907.....	405,517	8,382,780
1860.....	107,806	2,228,543	1884.....	51,202	1,058,439	1908.....	476,112	9,842,105
1861.....	128,973	2,666,118	1885.....	55,575	1,148,829	1909.....	453,865	9,382,230
1862.....	135,391	2,798,774	1886.....	70,782	1,463,196	1910.....	493,707	10,205,835
1863.....	202,498	4,186,011	1887.....	57,460	1,187,804	1911.....	473,159	9,781,077
1864.....	199,605	4,126,199	1888.....	53,145	1,098,610	1912.....	611,885	12,648,794
1865.....	192,898	3,987,562	1889.....	62,652	1,295,159	1913.....	802,973	16,598,923
1866.....	152,555	3,153,597	1890.....	55,620	1,149,776	1914.....	773,178	15,983,007
1867.....	145,775	3,013,431	1891.....	45,018	930,614	1915.....	918,056	18,977,901
1868.....	134,169	2,773,527	1892.....	43,905	907,601	1916.....	930,492	19,234,976
1869.....	102,720	2,123,405	1893.....	47,243	976,603	1917.....	738,831	15,272,992
1870.....	83,415	1,724,348	1894.....	54,600	1,128,688	1918.....	699,681	14,463,689
1871.....	105,187	2,174,412	1895.....	100,798	2,083,674	1919.....	766,764	15,850,423
1872.....	90,283	1,866,321	1896.....	133,262	2,754,774	1920.....	765,007	15,814,098
1873.....	74,246	1,536,871	1897.....	291,557	6,027,016	1921.....	926,329	19,148,920
1874.....	97,856	2,022,862	1898.....	666,386	13,775,420	1922.....	1,263,364	26,116,050
1875.....	130,300	2,693,533	1899.....	1,028,529	21,261,584	1923.....	1,233,341	25,495,421
1876.....	97,729	2,020,233	1900.....	1,350,057	27,908,153	1924.....	1,525,382	31,532,443
1877.....	94,304	1,949,444	1901.....	1,167,216	24,128,503	1925.....	1,735,735	35,880,826
1878.....	74,420	1,538,394	1902.....	1,032,161	21,336,667	1926.....	1,754,228	36,263,110
1879.....	76,547	1,582,358	1903.....	911,559	18,843,590			
1880.....	62,121	1,304,824	1904.....	796,374	16,462,517			
1881.....	63,524	1,313,153	1905.....	684,951	14,159,195	<b>Total.....</b>	<b>29,843,870</b>	<b>616,927,638</b>

\*Calculated from the value \$1=0.048375 ounces.

**Refined Metal.**—There were two refineries producing fine gold in Canada in 1926, namely, the Royal Mint, Ottawa, and the Consolidated Mining and Smelting Company of Canada, Limited, at Tadanac, near Trail, B.C. From all ores treated in 1926, the latter company produced 49,607 fine ounces. This gold was recovered principally from the gold in copper ores, but some was also recovered from silver-lead and dry ores. Small quantities of imported ores were also treated by this company.

Gold refined at the Royal Mint at Ottawa from the gold produced in Ontario and British Columbia and from the placer gold obtained in the Yukon, amounted to 1,375,502 fine ounces, including a small amount recovered from scrap and crude gold from various sources. The total production in Canada of refined gold during 1926 was, therefore, 1,425,109 fine ounces.

Table 125.—Refined Gold Produced at Trail, B.C., 1904-1926\*

Year	Fine oz.	Year	Fine oz.
1904.....	4,336	1916.....	23,608
1905.....	8,602	1917.....	49,661
1906.....	9,993	1918.....	61,212
1907.....	10,395	1919.....	47,283
1908.....	15,346	1920.....	42,636
1909.....	18,241	1921.....	56,297
1910.....	13,298	1922.....	18,940
1911.....	15,270	1923.....	11,113
1912.....	12,118	1924.....	23,412
1913.....	11,977	1925.....	18,441
1914.....	11,088	1926.....	49,607
1915.....	17,813		

\*Includes some gold derived from imported ores and from occasional shipments from Ontario, Manitoba, Alberta, and the Yukon.

Table 126.—Receipts of Gold Bullion from Canadian Sources at the Royal Mint, Ottawa, Ont., 1908-1926

Year	From Canadian Sources		From Foreign Countries	
	Crude oz.	Value	Crude oz.	Value
		gold content		gold content
		\$		\$
1908.....	219.19	3,823.03		
1909.....	5,741.43	94,864.81	38.25	673.98
1910.....	65,009.35	1,079,223.42		
1911.....	89,483.11	1,469,087.43	511.24	9,128.55
1912.....	104,825.29	1,676,371.78	742.79	12,451.33
1913.....	212,076.41	3,363,870.30	633.23	11,609.84
1914.....	29,762.24	471,042.90	4,750.19	98,062.84
1915.....	89,231.47	1,402,605.19	871,693.79	15,838,222.01
1916.....	49,195.39	780,074.19	6,687,758.41	121,513,083.93
1917.....	55,779.96	840,265.33	8,196,151.04	148,019,793.48
1918.....	302,785.96	4,982,743.81	3,728,224.05	67,739,887.68
1919.....	654,906.28	10,865,770.57	8,917.02	134,756.38
1920.....	724,083.34	11,530,413.82		
1921.....	1,054,277.01	16,914,211.58	53.00	826.87
1922.....	1,376,863.35	22,469,160.42	345.22	5,387.93
1923.....	779,466.92	12,682,163.78	295.53	4,935.16
1924.....	169,239.28	2,297,170.32	90.53	1,395.41
1925.....	167,375.64	2,489,532.52	192.35	2,900.59
1926.....	1,766,034.26	28,432,544.12	104.93	1,615.15

Table 127.—Receipts at the Royal Mint, Ottawa, Ont., by Sources, 1925 and 1926

Source	1925			1926		
	Gross weight	Precious metal content		Gross weight	Precious metal content	
		Fine gold	Fine silver		Fine gold	Fine silver
	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.
Nova Scotia.....	1,817.56	1,626.429	85.97	1,814.84	1,677.709	112.46
New Brunswick.....						
Quebec.....	8.61	8.596		43.26	39.159	3.67
Ontario.....	139,130.21	105,888.118	19,129.98	1,610,194.93	1,256,570.437	224,105.60
Manitoba.....	5,448.61	4,651.355	576.81	152.51	128.553	18.68
Saskatchewan.....	46.49	37.578	5.20	73.98	55.306	8.81
Alberta.....				5.16	4.045	0.41
British Columbia.....	2.09	1.553	0.16			
Dominion of Canada Assay Office, Vancouver*.....				124,477.87	104,252.882	16,658.25
Yukon.....						
Jewellery and scrap, various sources.....	20,922.07	8,217.515	3,203.42	29,271.71	12,696.275	4,684.32
Foreign.....	192.35	138.863	43.75	104.93	78.133	18.09
<b>Total.....</b>	<b>167,567.99</b>	<b>120,570.007</b>	<b>23,045.29</b>	<b>1,766,139.19</b>	<b>1,375,502.499</b>	<b>245,610.29</b>

\*Gold from the Assay Office was shipped to the United States in 1925 instead of to the Royal Mint, Ottawa, as in former years.

Table 128.—Receipts at Dominion of Canada Assay Office, Vancouver, B.C., 1908-1926

Year	Weight before melting	Weight after melting	Net value	Year	Weight before melting	Weight after melting	Net value
	Ounces	Ounces	\$		Ounces	Ounces	\$
1908 (a).....	90,175.48	89,117.76	1,478,894.00	1918.....	241,762.77	238,245.07	4,099,595.80
1909.....	48,478.58	47,576.27	789,267.94	1919.....	209,026.14	205,947.57	3,547,524.93
1910.....	46,064.31	45,228.92	746,101.92	1920.....	150,869.17	147,718.25	2,499,174.41
1911.....	39,784.70	39,069.31	647,416.38	1921.....	163,070.56	160,803.48	2,834,499.61
1912.....	59,068.82	57,951.98	974,077.14	1922.....	129,891.63	125,758.41	2,105,989.64
1913 (b).....	111,479.94	109,920.49	1,448,625.37	1923.....	129,043.63	124,546.48	2,051,369.65
1914.....	166,148.83	163,523.61	2,029,251.31	1924.....	114,041.96	107,569.15	1,850,373.74
1915.....	183,924.49	179,751.68	2,736,302.31	1925.....	140,691.78	123,202.39	2,065,217.16
1916.....	180,292.83	175,393.10	2,828,239.65	1926.....	162,606.56	145,279.61	2,524,337.58
1917.....	191,626.04	187,884.48	3,257,220.71				

(a) For 9 months only. (b) The removal of the assay charge in January 1913, accounts for the large increase.

## NOVA SCOTIA

Nova Scotia's gold production has been derived almost entirely from quartz ores, but gold also occurs in deposits of arsenical pyrites which are sometimes mined for the recovery of arsenic and gold. Production in 1926 amounted to 1,678 fine ounces. Gold mining in Nova Scotia reached its peak in 1902 when the output amounted to 30,348 fine ounces. Due partly to the exhaustion of the mines and partly to the high cost of supplies and labour, production has steadily declined in recent years, although of late, because of improved machinery and newer methods of mining and milling, there is some indication of a revival of gold mining in this province.

Table 129.—Production of Gold from Nova Scotia Ores, 1862-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$
1862.....	6,863	141,871	1895.....	21,919	453,119
1863.....	13,180	272,448	1896.....	23,876	493,568
1864.....	18,883	390,349	1897.....	27,195	562,165
1865.....	24,011	496,357	1898.....	26,054	538,590
1866.....	23,776	491,491	1899.....	29,876	617,604
1867.....	25,763	532,563	1900.....	28,955	598,553
1868.....	19,377	400,555	1901.....	26,459	546,963
1869.....	16,855	348,427	1902.....	30,348	627,357
1870.....	18,740	387,392	1903.....	25,533	527,806
1871.....	18,139	374,972	1904.....	10,362	214,209
1872.....	12,352	255,349	1905.....	13,707	283,353
1873.....	11,180	231,122	1906.....	12,223	252,676
1874.....	8,623	178,244	1907.....	13,675	282,686
1875.....	10,576	218,629	1908.....	11,842	244,799
1876.....	11,300	233,585	1909.....	10,193	210,711
1877.....	15,925	329,205	1910.....	7,928	163,891
1878.....	11,864	245,253	1911.....	7,781	160,854
1879.....	12,980	268,328	1912.....	4,385	90,638
1880.....	12,472	257,823	1913.....	2,174	44,935
1881.....	10,147	209,755	1914.....	2,904	60,031
1882.....	13,307	275,090	1915.....	6,636	137,180
1883.....	14,571	301,207	1916.....	4,562	94,305
1884.....	15,168	313,554	1917.....	2,210	45,685
1885.....	20,945	432,971	1918.....	1,176	24,310
1886.....	22,038	455,564	1919.....	850	17,571
1887.....	20,009	413,631	1920.....	690	14,263
1888.....	21,137	436,939	1921.....	439	9,075
1889.....	24,673	510,029	1922.....	1,042	21,540
1890.....	22,978	474,990	1923.....	655	13,540
1891.....	21,841	451,503	1924.....	1,047	21,643
1892.....	18,865	389,965	1925.....	1,626	33,612
1893.....	18,436	381,095	1926.....	1,678	34,687
1894.....	18,834	389,338			
			<b>Total.....</b>	<b>915,808</b>	<b>18,931,517</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## QUEBEC

Gold produced from ores mined in the province of Quebec during 1926 totalled 3,680 fine ounces valued at \$76,072. A small amount of this was recovered from the development of a property in northern Quebec and the remainder was gold contained in exports of high grade concentrate from the Têtreault mine which is primarily a lead-zinc producer.

Table 130.—Production of Gold from Quebec Ores, 1877-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1877.....	583	12,057	1895.....	62	1,281	1913.....	701	14,491
1878.....	868	17,937	1896.....	145	3,000	1914.....	1,292	26,708
1879.....	1,160	23,972	1897.....	44	900	1915.....	1,099	22,720
1880.....	1,605	33,174	1898.....	295	6,089	1916.....	1,034	21,375
1881.....	2,741	56,661	1899.....	238	4,916	1917.....	1,511	31,235
1882.....	827	17,093	1900.....			1918.....	1,939	40,083
1883.....	860	17,787	1901.....	145	3,000	1919.....	1,470	30,388
1884.....	422	8,720	1902.....	391	8,073	1920.....	955	19,742
1885.....	103	2,120	1903.....	180	3,712	1921.....	635	13,127
1886.....	193	3,981	1904.....	140	2,900	1922.....		
1887.....	78	1,604	1905.....	191	3,940	1923.....	667	13,788
1888.....	181	3,740	1906.....	165	3,412	1924.....	883	18,253
1889.....	58	1,207	1907.....			1925.....	1,602	33,116
1890.....	65	1,350	1908.....			1926.....	3,680	76,072
1891.....	87	1,800	1909.....	193	3,990			
1892.....	628	12,987	1910.....	124	2,565	<b>Total.....</b>	<b>33,666</b>	<b>695,900</b>
1893.....	759	15,696	1911.....	613	12,672			
1894.....	1,412	29,196	1912.....	642	13,270			

\*Calculated from the value: one dollar=0.048375 ounces.

## ONTARIO

Ontario's gold production in 1926 exceeded the total for any previous year. Since 1914, Ontario has become by far the largest producer of gold among the provinces of the Dominion; this remarkable increase was brought about by the successful development of the Porcupine and Kirkland Lake districts and by the extension of milling facilities in these camps. The falling-off in production during 1917-1918 was due to the abnormal conditions created by the war; high costs both of materials and labour restricted development programs; lack of adequate transportation facilities at reasonable rates and other factors hampered production. Gold was paid for in New York funds because of government limitations on export, and the exchange premium received by the producers proved an important feature of gold-marketing, from the close of the war until the end of 1921. The gradual recovery in the value of the Canadian dollar in the United States exchanges has greatly reduced the premiums paid to the Canadian gold mine operators. In 1920, the United States dollar had an average exchange value in Canada funds of \$1.12270; the average exchange value in 1923 was \$1.0197, and in 1926 it stood at practically par. Besides the production from Ontario's gold mines, an appreciable amount is obtained annually as a by-product from the nickel-copper ores of the Sudbury district. Gold from the International Nickel is obtained in the refining of the precious metals residues of the Port Colborne refinery and gold credited to the Mond Nickel is that recovered from the refinery at Clydach, Wales.

Table 131.—Production of Gold from Ontario Ores, 1887-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1887.....	327	6,760	1901.....	11,844	244,837	1915.....	406,577	8,404,693
1888.....			1902.....	11,118	229,828	1916.....	492,481	10,180,485
1889.....			1903.....	9,096	188,036	1917.....	423,261	8,749,581
1890.....			1904.....	1,935	40,000	1918.....	411,976	8,516,299
1891.....	97	2,000	1905.....	4,402	91,000	1919.....	505,739	10,454,553
1892.....	344	7,118	1906.....	3,202	66,193	1920.....	554,995	11,679,483
1893.....	708	14,637	1907.....	3,212	66,398	1921.....	708,213	14,640,062
1894.....	1,917	39,624	1908.....	3,212	66,398	1922.....	1,000,340	20,678,862
1895.....	3,015	62,320	1909.....	1,569	32,425	1923.....	971,704	20,086,904
1896.....	5,563	115,000	1910.....	3,089	63,849	1924.....	1,241,728	25,668,795
1897.....	9,157	189,294	1911.....	2,062	42,625	1925.....	1,461,039	30,202,357
1898.....	12,863	265,889	1912.....	86,523	1,788,596	1926.....	1,497,215	30,950,180
1899.....	20,394	421,591	1913.....	219,801	4,543,690			
1900.....	14,391	297,495	1914.....	268,264	5,545,509	<b>Total.....</b>	<b>10,383,373</b>	<b>214,643,366</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## MANITOBA

Manitoba mines produced 188 fine ounces of gold during 1926, having a value of \$3,886. During 1917 and 1918 shipments of gold-bearing copper ores were made from the Pas district in northern Manitoba to Trail, but because of the drop in the price of copper, and also because of inadequate transportation facilities in the copper-mining district of the province, there has been no production of gold from this source in recent years. There is much of interest in the gold area stretching eastward from Lake Winnipeg along Wanipigou and Manigotagan rivers to the Ontario boundary. A considerable amount of prospecting has been done in this district and the indications are that Manitoba will produce gold in quantity within the next year or two.

Table 132.—Production of Gold from Manitoba Ores 1917-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$
1917.....	440	9,095	1923.....	31	641
1918.....	1,926	39,814	1924.....	1,180	24,393
1919.....	724	14,966	1925.....	4,424	91,452
1920.....	781	16,145	1926.....	188	3,886
1921.....	207	4,279			
1922.....	156	3,228	<b>Total.....</b>	<b>10,057</b>	<b>207,896</b>

\*Calculated from the value: one dollar=0.048375 ounces.

## SASKATCHEWAN AND ALBERTA

No production of gold was reported from these two provinces in 1926. Occasionally, small quantities of gold have been recovered by prospectors in Alberta from the gravels of the Saskatchewan river. To date, the grand total of gold produced by Alberta has amounted to 15,109 fine ounces valued at \$312,333.

Table 133.—Production of Gold from Alberta, 1887-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1887.....	102	2,100	1902.....	484	10,000	1917.....		
1888.....	58	1,200	1903.....	48	1,000	1918.....	27	558
1889.....	967	20,000	1904.....	24	500	1919.....	24	500
1890.....	193	4,000	1905.....	121	2,500	1920.....		
1891.....	266	5,500	1906.....	39	800	1921.....	49	1,013
1892.....	508	10,506	1907.....	33	675	1922.....		
1893.....	466	9,640	1908.....	50	1,037	1923.....		
1894.....	726	15,000	1909.....	25	525	1924.....		
1895.....	2,419	50,000	1910.....	89	1,850	1925.....		
1896.....	2,661	55,000	1911.....	10	207	1926.....		
1897.....	2,419	50,000	1912.....	73	1,509			
1898.....	1,209	25,000	1913.....			<b>Total.....</b>	<b>15,109</b>	<b>312,333</b>
1899.....	726	15,000	1914.....	48	992			
1900.....	242	5,600	1915.....	195	4,026			
1901.....	726	15,000	1916.....	82	1,695			

\*Calculated from the value: one dollar =0.048375 ounces.

## BRITISH COLUMBIA

Production of gold in British Columbia during 1926 totalled 225,866 fine ounces valued at \$4,669,065 as against 219,227 fine ounces valued at \$4,531,824 in 1925.

More gold was recovered from the placer workings, and increases were noted in the gold contained in blister copper made at the Trail and Anyox smelters while the gold contained in ores exported was considerably less than 1925.

The figures are as follows: (a) alluvial gold, 16,730 fine ounces or 7.4 per cent of the total for the province; (b) bullion from milling ores, 25,312 fine ounces or 11.1 per cent; (c) Canadian smelter recoveries of gold, 64,871 fine ounces or 28.7 per cent, and (d) the estimated recoveries from ores and concentrates exported, 118,953 fine ounces or 52.8 per cent. The corresponding figures for 1925 were: (a) 13,181 fine ounces or 6.02 per cent, (b) 19,407 fine ounces or 8.85 per cent, (c) 42,426 fine ounces or 19.37 per cent, and (d) 144,213 fine ounces or 65.76 per cent.

In the statistics reported by the British Columbia Provincial Bureau of Mines for 1926 the quantity given for gold production is based on the *metal content of ores shipped* and is somewhat higher than the records of *smelter recoveries* used by the Dominion Bureau of Statistics.

Table 131.—Production of Gold from British Columbia Ores, 1858-1926

Year	Fine ounces*	Value	Year	Fine ounces*	Value	Year	Fine ounces*	Value
		\$			\$			\$
1858.....	34,104	705,000	1882.....	46,154	954,085	1906.....	269,886	5,579,039
1859.....	78,129	1,615,072	1883.....	38,422	794,252	1907.....	236,216	4,853,020
1860.....	107,806	2,228,543	1884.....	35,612	736,165	1908.....	286,858	5,929,880
1861.....	128,973	2,666,118	1885.....	34,527	713,738	1909.....	250,320	5,174,579
1862.....	128,528	2,656,903	1886.....	43,714	903,651	1910.....	261,386	5,403,318
1863.....	189,318	3,913,563	1887.....	33,558	693,709	1911.....	238,496	4,930,145
1864.....	180,722	3,735,850	1888.....	29,834	616,731	1912.....	251,815	5,205,485
1865.....	168,887	3,491,205	1889.....	28,489	588,923	1913.....	297,459	6,149,027
1866.....	128,779	2,662,101	1890.....	23,918	494,436	1914.....	252,730	5,224,393
1867.....	120,012	2,480,868	1891.....	20,792	429,811	1915.....	273,376	5,651,184
1868.....	114,792	2,372,972	1892.....	19,327	399,525	1916.....	219,633	4,540,216
1869.....	85,865	1,774,978	1893.....	18,360	379,535	1917.....	133,742	2,764,693
1870.....	64,675	1,336,956	1894.....	25,664	530,530	1918.....	180,163	3,724,300
1871.....	87,048	1,799,440	1895.....	61,289	1,266,954	1919.....	167,252	3,457,406
1872.....	77,931	1,610,972	1896.....	86,504	1,788,206	1920.....	124,808	2,580,010
1873.....	63,166	1,305,749	1897.....	131,805	2,724,657	1921.....	150,792	3,117,147
1874.....	89,233	1,844,618	1898.....	142,215	2,939,852	1922.....	207,370	4,286,718
1875.....	119,724	2,474,904	1899.....	203,295	4,202,473	1923.....	200,140	4,137,261
1876.....	86,429	1,786,648	1900.....	228,916	4,732,105	1924.....	245,719	5,079,462
1877.....	77,796	1,608,182	1901.....	257,292	5,318,703	1925.....	219,227	4,531,824
1878.....	61,688	1,275,204	1902.....	288,383	5,961,409	1926.....	225,866	4,669,065
1879.....	62,407	1,290,058	1903.....	284,108	5,873,036			
1880.....	49,044	1,013,827	1904.....	275,975	5,704,908			
1881.....	50,636	1,046,737	1905.....	285,529	5,902,402	<b>Total.....</b>	<b>9,692,628</b>	<b>200,361,441</b>

\* Calculated from the value: one dollar=0.048375 ounces.

Table 135.—Production of Gold in British Columbia by Districts, 1925 and 1926

(From Annual Report of the Minister of Mines for British Columbia)

District and division	1925				1926			
	Gold Alluvial*		Gold lode		Gold Alluvial		Gold lode	
	Ounces	Value	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$		\$
Northwestern District (No. 1)—								
Atlin.....	2,896	49,229	1,878	38,822	2,607	44,318	7,757	160,351
Stikine.....	41	700						
Liard.....	441	7,500			624	10,608		
Nass River.....			7,484	154,708			7,906	163,431
Portland Canal.....			118,469	2,448,967			124,207	2,567,582
Skeena.....			35,086	725,291			11,128	230,036
Queen Charlotte.....								
Bella Coola.....	4	70						
Northeastern District (No. 2)—								
Cariboo.....	8,919	151,627			10,059	170,993		
Quesnel.....	2,995	50,911			7,149	121,535		
Omineca.....	269	4,560	121	2,501	59	1,000	439	9,075
Peace River.....	177	3,000			88	1,500		
Central District (No. 3)—								
Nicola.....							12	248
Vernon.....	4	60						
Yale.....	29	500	37	765	29	500	59	1,220
Ashcroft.....					15	250		
Kamloops.....	78	1,320			18	302	125	2,584
Lillooet.....	83	1,415	3,531	72,992	29	500	4,580	94,677
Clinton.....	95	1,620			68	1,155		
Southern District (No. 4)—								
Grand Forks.....							20	413
Greenwood.....			53	1,096			166	3,432
Osoyoos.....			19,426	401,570			16,280	336,537
Similkameen.....	146	2,482	242	5,002	96	1,621	3,988	82,439
Eastern District (No. 5)—								
Fort Steele.....	262	4,449			29	500	321	6,636
Windermere.....								
Golden.....	2	40			13	221		
Ainsworth.....			16	331			26	537
Slocan.....			310	6,408			139	2,873
Slocan City.....								
Nelson.....			723	14,946			6,671	137,902
Arrow Lake.....								
Trail Creek.....			14,112	291,720			7,600	157,106
Revelstoke.....	29	500			29	500		
Trout Lake.....								
Lardeau.....							8	165
Western District (No. 6)—								
Nanaimo.....								
Alberni.....								
Clayoquot.....								
Quatsino.....								
Victoria.....	6	109						
New Westminster.....								
Vancouver.....			8,231	170,150			9,995	206,615
<b>Total.....</b>	<b>16,476</b>	<b>280,092</b>	<b>209,719</b>	<b>4,335,269</b>	<b>20,912</b>	<b>355,503</b>	<b>201,427</b>	<b>4,163,859</b>

\*Alluvial gold is valued at \$17 an ounce, which is belived to be a fair average for the whole province.

## YUKON

Yukon's gold production in 1926, except for a small amount which was contained in ores exported for treatment in foreign smelters, was derived from the alluvial sands and gravels of the Dawson and White Horse districts and showed a decrease of 47 per cent from the 1925 production. The output for 1926 was 25,601 fine ounces, of which 25,344 fine ounces were obtained from alluvial operations and 257 fine ounces, from lode mines in the Mayo district. In 1925 the recovery of 47,817 fine ounces from alluvial operations constituted the sum for the Territory as none was obtained from lode mining.

Royalty was paid on 31,680.22 crude ounces, of which 31,392.65 ounces were recovered in the Dawson district and 287.57 ounces from the White Horse district. The crude gold was estimated to contain 25,344 ounces of fine gold valued at \$523,907 and 5,702 ounces of fine silver valued at \$3,541. In 1925, royalty was paid on 59,771.47 crude ounces which included 47,817 ounces of fine gold valued at \$988,465 and 10,759 ounces of fine silver valued at \$7,431.

The following table shows statistics of gold production in the Yukon during the past 41 years. Between the years 1896 and 1906 the figures were based on receipts of gold at United States mints and receiving offices, credited to the Canadian Yukon.

Since 1902 a royalty of  $2\frac{1}{2}$  per cent on all gold produced, has been collected by the Canadian Government which places a nominal value of \$15 on each crude ounce recovered. The statistics shown for these years are based on the returns supplied by the *Mining Lands and Yukon Branch of the Department of the Interior* and the fine gold is estimated as 80 per cent of all crude gold, fine silver as 18 per cent and the remaining 2 per cent is regarded as worthless base metal.

The Vancouver Assay office which is operated by the Department of Mines at Ottawa receives and melts a considerable portion of the placer gold from the Yukon. During 1926 there were received from this territory 32,686.16 ounces valued, after all charges had been deducted, at \$537,822 or \$16.46 per ounce as against 61,096.43 ounces valued at \$977,624 or \$16 per ounce in 1925.

Table 136.—Production of Gold from the Yukon, 1885-1926

Year	Fine ounces *	Value	Year	Fine ounces *	Value	Year	Fine ounces *	Value
		\$			\$			\$
1885).....	4,837	100,000	1900.....	1,077,553	22,275,000	1915.....	230,173	4,758,098
1886).....			1901.....	870,750	18,000,000	1916.....	212,700	4,396,900
1887).....	3,386	70,000	1902.....	701,437	14,500,000	1917.....	177,667	3,672,703
1888).....	1,935	40,000	1903.....	592,594	12,250,000	1918.....	102,474	2,118,325
1889).....	8,466	175,000	1904.....	507,938	10,500,000	1919.....	90,705	1,875,039
1890).....	8,466	175,000	1905.....	381,001	7,876,000	1920.....	72,778	1,504,455
1891).....	1,953	40,000	1906.....	270,900	5,600,000	1921.....	65,994	1,364,217
1892).....	4,233	87,500	1907.....	152,381	3,150,000	1922.....	54,456	1,125,705
1893).....	8,514	176,000	1908.....	174,150	3,600,000	1923.....	60,144	1,243,287
1894).....	6,047	125,000	1909.....	191,565	3,960,000	1924.....	34,825	719,897
1895).....	12,094	250,000	1910 (a).....	221,091	4,570,362	1925.....	47,817	988,465
1896).....	14,513	300,000	1911.....	224,197	4,634,574	1926 (b).....	25,601	529,220
1897).....	120,937	2,500,000	1912.....	268,447	5,549,296			
1898).....	483,750	10,000,000	1913.....	282,838	5,846,780			
1899).....	774,000	16,000,000	1914.....	247,940	5,125,374	<b>Total.....</b>	<b>8,793,247</b>	<b>181,772,197</b>

(\*) Calculated from the value: one dollar=0.048375 ounces.

(a) Includes a small production from lode mines, from 1910 to 1923 inclusive.

(b) Includes a small production from lode mines in 1926.

Table 137.—Receipts from the Yukon, at the Dominion of Canada Assay Office, Vancouver, B.C., 1908-1926

Year	Weight before melting	Net value	Average value	Year	Weight before melting	Net value	Average value
	Ounces	\$	\$		Ounces	\$	\$
1908 (a).....	60,132.00	1,000,296	16.63	1918.....	121,310.37	1,921,198	15.84
1909.....	5,003.12	83,871	16.75	1919.....	111,138.65	1,813,883	16.32
1910.....	3,594.87	62,094	17.27	1920.....	74,456.01	1,206,579	16.21
1911.....	2,073.61	34,944	16.88	1921.....	82,219.92	1,340,225	16.30
1912.....	2,211.88	36,481	16.41	1922.....	69,161.19	1,126,702	16.29
1913 (b).....	15,235.29	247,189	16.22	1923.....	73,360.82	1,201,133	16.37
1914.....	56,564.83	915,914	16.21	1924.....	44,365.96	717,156	16.17
1915.....	87,040.87	1,418,497	16.28	1925.....	61,096.43	977,624	16.00
1916.....	95,005.82	1,525,724	16.06	1926.....	32,686.16	537,822	16.46
1917.....	79,532.35	1,262,207	15.87				

(a) For nine months only.

(b) The removal in 1913 of the assay charge, accounts for the great increase.

Table 138.—Production of Alluvial Gold in the Yukon by Months, 1924-1926

(Gross weight of dust, nuggets, and bullion in ounces)

Month	1924	1925	1926
January.....	1,381.51	1,483.60	4.32
February.....	52.07	999.38	
March.....	1,468.51	30.50	175.64
April.....	100.10		
May.....	129.66		2,666.27
June.....	8,651.62	4,988.62	3,219.01
July.....	6,831.51	10,052.62	4,293.52
August.....	6,225.10	5,051.47	4,280.60
September.....	4,971.71	27,166.78	5,554.27
October.....	9,168.36	7,626.72	6,611.83
November.....	3,080.63	413.70	3,000.23
December.....	1,470.01	1,958.08	1,874.53
<b>Total.....</b>	<b>43,530.79</b>	<b>59,771.47</b>	<b>31,680.22</b>

From 1898 to March 31, 1927, royalties to the extent of \$4,913,392.66 were collected on the gold production of the Yukon. The yearly amounts collected, as well as the annual production of gold as ascertained by the *Department of the Interior*, are shown below. The difference between these figures and those shown in the table of annual production, which are based on mint receipts of Yukon gold is probably due to three factors: (1) the fixing of the value of the gold for royalty purposes at \$15 per ounce, (2) the probability that, in the earlier years of royalty collection, considerable quantities of gold dust left the camps unrecorded and escaped royalty payments, and (3) the fact that in the last few years there has been a small production from lode mines.

Table 139.—Gold Production in the Yukon and the Royalty Collected, 1898-1927

(Supplied by Superintendent H. H. Rowatt, of the Mining Lands Branch of the Department of the Interior.)

Fiscal year	Total gold production	Total exemption	Royalty collected on	Royalty paid
	\$	\$	\$	\$
Ending June, 1898.....	3,072,773	339,845	2,732,928	273,292.82
Ending June, 1899.....	7,582,283	1,699,657	5,882,626	588,262.87
Ending June, 1900.....	9,809,464	2,501,744	7,307,720	730,771.99
Ending June, 1901.....	9,162,082	1,927,666	7,234,416	592,660.98
Ending June, 1902.....	9,566,340	1,199,114	8,367,226	351,436.79
Ending June, 1903.....	12,113,015		12,113,015	302,893.48
Ending June, 1904.....	10,790,663		10,790,663	272,217.95
Ending June, 1905.....	8,222,054		8,222,054	206,760.87
Ending June, 1906.....	6,540,007		6,540,007	163,963.25
Ending March, 1907.....	3,304,791		3,304,791	82,622.42
Ending March, 1908.....	2,820,162		2,820,162	70,504.65
Ending March, 1909.....	3,260,282		3,260,282	81,507.07
Ending March, 1910.....	3,594,251		3,594,251	89,844.10
Ending March, 1911.....	4,126,728		4,126,728	103,168.19
Ending March, 1912.....	4,024,237		4,024,237	100,606.29
Ending March, 1913.....	5,018,412		5,018,412	125,460.52
Ending March, 1914.....	5,301,508		5,301,508	132,537.69
Ending March, 1915.....	4,649,634		4,649,634	116,241.04
Ending March, 1916.....	4,458,278		4,458,278	111,457.19
Ending March, 1917.....	3,960,207		3,960,207	99,007.92
Ending March, 1918.....	3,266,019		3,266,019	81,650.55
Ending March, 1919.....	1,947,082		1,947,082	48,677.07
Ending March, 1920.....	1,660,450		1,660,450	41,501.12
Ending March, 1921.....	1,246,486		1,246,486	31,273.76
Ending March, 1922.....	1,230,987		1,230,987	30,774.68
Ending March, 1923.....	1,032,762		1,032,762	25,819.04
Ending March, 1924.....	1,136,368		1,136,368	28,409.23
Ending March, 1925.....	625,459		625,459	15,636.48
Ending March, 1926.....	879,819		879,819	21,995.50
Ending March, 1927.....	497,504		497,504	12,437.64
<b>Total.....</b>	<b>134,900,107</b>		<b>127,232,081</b>	<b>4,913,392.66</b>

Table 140.—Imports into Canada and Exports of Gold, 1924-1926

	1924	1925	1926
	\$	\$	\$
<b>IMPORTS—</b>			
Coin and bullion—			
Coins, British, Canadian and foreign gold coins.....	3,315,228	49,477,383	45,077,807
Gold bullion, in bars, blocks, ingots, drops, sheets or plates, unmanufactured....	924,644	1,031,597	2,048,033
<b>Total.....</b>	<b>4,239,872</b>	<b>50,508,980</b>	<b>47,125,840</b>
Gold, other—			
Bullion or fringe gold.....	40,468	27,215	34,836
Manufactures of gold and silver—			
Leaf.....	69,495	76,364	87,597
Sweepings.....	5,508	2,282	2,676
Manufacturers, n.o.p.....	142,008	147,839	*
Electroplated ware.....	604,500	707,726	846,216
Medals of gold, silver or copper, and other metallic articles, actually bestowed as trophies or prizes, and received and accepted as honorary distinctions, and cups or other metallic prizes won in bona fide competitions.....			21,006
<b>Total.....</b>	<b>861,979</b>	<b>961,426</b>	<b>992,331</b>
<b>EXPORTS—</b>			
Coin and bullion—			
Gold coin—			
Canadian.....			4,000,000
Foreign.....		3,026	24,010,603
Gold bullion—			
Canadian.....	6,988,633	333,090	41,812,356
Foreign.....			
<b>Total—Canadian.....</b>	<b>6,988,633</b>	<b>333,090</b>	<b>45,812,356</b>
<b>Foreign.....</b>		<b>3,026</b>	<b>24,010,603</b>
Gold-bearing quartz, dust, nuggets and bullion obtained direct from mining operations.....	28,358,440	31,432,647	7,340,451

\*Included with silver imports under manufactures of gold and silver, n.o.p.

Table 141.—Comparative Figures of Gold Production, for the World, Africa and Canada, 1915, and 1921-1926

\*From *The Year Book of the American Bureau of Metal Statistics*.

Year	*World's output	*Africa's output	Canada's output
	fine ounces	fine ounces	fine ounces
1915.....	22,593,833	10,538,588	918,056
1921.....	15,983,772	9,044,595	926,329
1922.....	15,444,830	8,009,069	1,263,364
1923.....	17,786,471	10,156,522	1,233,341
1924.....	19,023,134	10,622,168	1,525,382
1925.....	19,114,953	10,569,809	1,735,735
1926.....	19,336,962	11,007,159	1,754,228

Table 142.—World Production of Gold, (a) 1913 and 1922-1926

(From the Year Book of the American Bureau of Metal Statistics, 1926)

(Fine ounces)

	1913	1922	1923	1924	1925	1926
<b>NORTH AMERICA—</b>						
United States.....	4,299,784	2,363,075	2,502,632	2,528,900	2,411,987	2,288,089
Canada.....	802,973	1,263,364	1,233,341	1,525,382	1,735,735	†1,748,364
Mexico.....	829,783	748,291	776,808	792,401	788,993	772,661
<b>Total North America.....</b>	<b>5,932,540</b>	<b>4,374,730</b>	<b>4,512,781</b>	<b>4,846,683</b>	<b>4,936,715</b>	<b>4,809,114</b>
<b>Central America and West Indies.....</b>	<b>131,661</b>	<b>129,937</b>	<b>96,750</b>	<b>87,075</b>	<b>96,750</b>	<b>70,000</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	8,467	407	407	964	386	.....
Chili.....	.....	79,828	105,549	112,011	112,000	.....
Brazil.....	109,072	146,668	144,675	120,824	120,337	.....
Colombia.....	143,757	275,737	275,738	96,750	96,750	.....
Ecuador.....	19,665	42,456	42,456	38,700	36,281	.....
Peru.....	23,813	81,436	120,372	118,955	117,733	.....
Guiana—British.....	65,475	10,876	7,262	7,187	9,107	.....
Dutch.....	22,757	11,992	12,731	10,352	9,902	.....
French.....	147,571	48,772	44,624	63,496	40,220	.....
Venezuela.....	21,517	17,361	17,361	17,361	30,542	.....
Other countries.....	1,572	3,967	3,881	2,915	2,661	.....
<b>Total South America.....</b>	<b>563,666</b>	<b>719,500</b>	<b>775,056</b>	<b>562,515</b>	<b>575,919</b>	<b>*600,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	105,425	546	739	1,961	1,865	.....
Czecho-Slovakia.....	.....	8,294	3,344	9,002	7,587	.....
France.....	102,912	16,493	16,943	19,804	36,972	.....
Great Britain.....	864	.....	.....	.....	.....	.....
Roumania.....	.....	42,984	48,225	42,149	49,897	.....
Russia and Siberia.....	1,282,313	146,700	250,673	958,070	1,060,950	.....
Other countries.....	24,290	9,744	11,351	18,070	17,845	.....
<b>Total Europe.....</b>	<b>1,515,804</b>	<b>224,761</b>	<b>331,275</b>	<b>1,049,056</b>	<b>1,175,116</b>	<b>*1,200,000</b>
<b>AUSTRALASIA—</b>						
New South Wales.....	149,657	25,222	18,833	18,685	19,422	19,435
Queensland.....	265,735	80,584	88,726	98,841	46,406	9,086
South Australia.....	6,556	1,000	950	880	1,406	780
Victoria.....	434,932	106,872	95,403	67,167	47,296	49,078
West Australia.....	1,314,043	538,245	504,511	485,035	441,252	437,343
New Zealand.....	343,595	144,117	164,408	122,341	111,202	*125,000
Tasmania.....	33,400	3,431	3,684	4,625	3,524	3,707
Other countries.....	21,392	12,260	12,741	2,391	2,611	*5,000
<b>Total Australasia.....</b>	<b>2,569,311</b>	<b>911,731</b>	<b>889,256</b>	<b>799,965</b>	<b>673,119</b>	<b>649,429</b>
<b>ASIA—</b>						
British India.....	589,109	438,015	383,697	396,349	393,807	383,260
China.....	176,999	100,000	89,500	107,300	107,300	*100,000
Chosen (Korea).....	173,306	127,892	121,433	134,128	134,128	*135,000
British East Indies.....	65,402	29,025	29,025	24,187	24,187	*24,000
Dutch East Indies.....	163,852	104,295	115,547	124,388	132,715	*130,000
Formosa.....	39,406	21,958	21,958	8,653	9,035	*9,000
Japan.....	174,846	241,993	247,266	244,500	271,000	*270,000
Other countries.....	24,596	20,924	16,405	16,167	15,353	*20,000
<b>Total Asia.....</b>	<b>1,407,516</b>	<b>1,084,102</b>	<b>1,024,831</b>	<b>1,055,672</b>	<b>1,087,525</b>	<b>1,071,260</b>
<b>AFRICA—</b>						
Belgian Congo.....	44,334	68,351	91,306	118,119	122,781	*125,000
Madagascar.....	60,769	18,582	16,686	10,802	13,471	*10,000
Rhodesia.....	690,541	655,296	649,082	628,974	582,752	637,395
British West Africa.....	384,836	213,395	200,565	233,910	199,697	*230,000
Transvaal, Cape Colony and Natal.....	8,798,713	7,009,858	9,149,073	9,575,040	9,597,592	9,954,764
Other countries.....	45,623	43,587	49,810	55,323	53,516	*50,000
<b>Total Africa.....</b>	<b>10,024,816</b>	<b>8,009,069</b>	<b>10,156,522</b>	<b>10,622,168</b>	<b>10,569,809</b>	<b>11,007,159</b>
<b>Grand Total.....</b>	<b>22,145,314</b>	<b>15,444,830</b>	<b>17,786,471</b>	<b>19,023,134</b>	<b>19,114,953</b>	<b>19,336,962</b>

(a) 1913-1925 as reported by the Director of the Mint with some changes. 1926 as compiled by the American Bureau of Metal Statistics.

†Preliminary estimate. Final production as shown in Table — was 1,754,228 ounces.

\*Conjectural figures based on the 1925 outputs. Production of the Philippine Islands is included with the United States.

## CHAPTER FOUR

## THE SILVER MINING INDUSTRY IN CANADA

(Including the Silver-Cobalt Mining Industry, the Silver-Lead-Zinc Mining Industry, and Commodity Statistics Tables on Arsenic, Cobalt, Silver, Lead and Zinc.)

1. General Review.
2. The Silver-Cobalt Mining Industry.
3. The Silver-Lead-Zinc Mining Industry.
4. Commodity Statistics—including tables showing production by provinces, imports, exports, prices, and world output of Arsenic, Cobalt, Silver, Lead and Zinc.

## 1. General Review

(a) *Definition of the Industry.*—Silver mining is not a distinct industry in Canada, as silver is found only in association with other metals; with lead and zinc, particularly, in western Canada, with cobalt in northern Ontario, and with lode and alluvial gold, copper and other metals in various localities. Industrial reviews concerning the production of silver must therefore consider the various sources of supply, and general statistics on this subject should relate to each of the contributing sections of the mining industry. Silver-lead-zinc mining is a very important industry in British Columbia, the Yukon Territory, Quebec and, to a less extent, in Ontario, whereas the mining of silver-cobalt ores is carried on in Canada only in the province of Ontario. While silver is the predominating metal in some ores of the silver-lead-zinc group there are other mines which yield an ore carrying lead and zinc in greater values, so that the silver content is of secondary importance. Silver values are the governing feature in the silver-cobalt ores of Ontario. Alluvial and lode gold and ores containing copper and gold usually contain commercial values in silver also, but in these ores, the metals, other than silver, are generally of greater importance.

(b) *Historical.*—Silver production in Canada dates back many years, the earliest account being that of the finding of argentiferous-lead on the Quebec side of lake Timiskaming about 1686; it is somewhat remarkable that the Cobalt area lying within a short distance of this property, and one of the richest silver camps in the world, was not found until 1903. In 1868 Thomas McFarlane, working on a rock about 80 or 90 feet in diameter, off Thunder Cape, in lake Superior, discovered a vein containing galena and silver which was afterwards worked as the Silver Islet mine; this property yielded about 3.5 million dollars' worth of silver before it was flooded by the waters of the lake. Then in 1903 the next big find was made. Long lake, later called "Cobalt lake," was the centre of the area which became known as the "Cobalt Silver Camp." This camp and the allied camps of Gowganda and South Lorrain, have been in continuous operation since that time and to the end of 1926 have yielded upwards of 373 million ounces of silver.

In British Columbia the main source of silver for many years was from the silver-lead-zinc ores of the east and west Kootenay districts. These ores were complex and, because of the finely disseminated sulphides, were very hard to treat. The Consolidated Mining and Smelting Company of Trail, B.C., has been the pioneer in Canada in the treatment of these ores. For years the zinc content of British Columbia ores was regarded as detrimental, and treatment of these ores by the smelter could only be carried on profitably by the imposition of penalty charges based on the zinc content. But as the result of an exhaustive research, covering a period of years a method of concentrating and treatment was evolved whereby the ores could be handled more economically. Enhanced prices of lead and zinc in the last few years also proved to be the means of bringing back into a paying position many mines that formerly had been unable to operate at a profit.

In the Yukon, the rich silver-lead ores of the Keno Hill district provide the principal source of the silver production from that section of Canada. Quebec province also, in the last few years, has added its quota in the output of these metals; considerable work is being done on prospects in the Gaspé Peninsula.

Nova Scotia and the prairie provinces have yielded only small quantities of these metals up to the present time, but development and investigational work is being carried on at a zinc property in Cape Breton Island and it is anticipated that Nova Scotia will soon be a contributing factor in Canada's zinc production.

(c) *Sources of Silver, Lead, Zinc, Cobalt and Arsenic.*—In 1926 the total production of silver from Canadian ores of all kinds amounted to 22,371,924 fine ounces and included (a) silver contained in silver and gold bullion produced, 8,153,296 fine ounces, or 36.6 per cent of the total, (b) silver contained in blister copper or lead bullion made, 7,985,197 fine ounces, or 35.6 per cent, and (c) silver estimated as recoverable from ores of all kinds exported for treatment in foreign smelters, 6,233,431 fine ounces, or 27.8 per cent.

The production of lead during the same year amounted to 283,801,265 pounds, an advance of 11.9 per cent above the previous high record of 253,590,578 pounds set up in 1925. Of the total the Trail smelter produced 265,244,596 pounds of lead contained in base bullion made; the remainder, 18,556,669 pounds, included lead estimated as recoverable from silver-lead-zinc ores shipped from the mines of the Yukon, and from the lead-zinc properties of Quebec, and pig lead made at Galetta in Ontario, with also small quantities of lead contained in silver-lead-bismuth bullion recovered by the smelters treating cobalt ores.

Zinc production during the same year amounted to 149,938,105 pounds, an increase of 37.2 per cent over the Canadian production of 109,268,511 pounds in 1925. Most of Canada's zinc output is in the form of metallic zinc produced by the Consolidated Mining and Smelting Company at Trail, B.C. The remainder represents zinc estimated as recoverable from ores and residues exported for treatment in foreign smelters.

For the past two decades the ores of the Cobalt district of Ontario have been the main source of the world's supply of cobalt, but in 1926, owing to the production of cobalt by the Union Minière du Haut Katanga, of Central Africa, where it occurs with copper ores, Canada's production was cut to 55 per cent of the world's output.

Computed as the sum of the cobalt contained in metal, oxides, salts, ores, concentrates and residues marketed in 1926, the production of cobalt in Canada amounted to 664,778 pounds valued at \$1,136,014.

Arsenic is produced in Canada from the cobalt-silver-nickel-arsenic ores of the Cobalt district by the smelter of the Deloro Smelting and Refining Company Limited, Deloro, Ontario. It is also contained in the concentrates shipped to the Tacoma smelter by the Nickel Plate gold mine of British Columbia, but owing to the low price prevailing during the past two years this company has had little or no return for the arsenic.

In 1926 the total production, calculated as  $\text{As}_2\text{O}_3$  amounted to 5,074,677 pounds valued at \$146,811, as compared with 3,434,137 pounds valued at \$130,302 in 1925. Of the 1926 production, 3,984,217 pounds valued at \$134,124 was in the form of white arsenic, and 1,090,460 pounds valued at \$12,687 was the  $\text{As}_2\text{O}_3$  contained in the arsenical concentrates and residues exported.

(d) *Importance of these Metals.*—Lead production in Canada holds third place, silver sixth place, and zinc eighth place in point of value among the metals and minerals produced. In 1926 Canada ranked third among the world's silver-producing countries; Mexico produced 98 million ounces; and the United States, 61 million ounces. In the production of lead Canada was surpassed by the United States, Mexico, Australia and Spain. In smelter output of zinc, the United States had the highest production of any country, being followed by Belgium, Upper Silesia, France, Germany and Canada in the order named. In the production of cobalt, Canada and Central Africa produced about equal amounts. From 1904 to 1910 the cobalt production figures represent an estimate of the cobalt content of the ores shipped from the mines, a large

part of which was not recovered. From 1911 until the present time cobalt production is computed by adding the cobalt content of all cobalt metal, oxides and salts sold by the Ontario smelters, to the cobalt paid for in ores and residues exported for treatment in foreign smelters and represents a true figure of Canada's cobalt production since that time.

Reliable world's figures on the production of arsenic are very difficult to obtain, but according to a statement in *The Mineral Industry*, 1926, Canada ranked third among the producing countries in that year, being surpassed only by the United States and Mexico. Because of its low price and the instability of demand, smelters operating long distances from the markets do not attempt its complete recovery.

## 2. The Silver-Cobalt Mining Industry

After the remarkable Silver Islet production, comparatively little silver was produced in Ontario until the discovery of the mineral wealth of the Cobalt area in 1903. From 1905, when the output of silver was over 2,000,000 ounces, the production increased rapidly until the peak year was reached in 1911. In that year Ontario's production of silver was 30,540,754 ounces. In the following year production declined to 29,000,000 ounces and thereafter followed a generally downward trend until 1921, when less than 10,000,000 ounces were reported; there has been little change in the volume of output during recent years.

Ontario is the only province producing cobalt and refined arsenic. Some of the older properties around Cobalt have been worked out, but new discoveries in South Lorrain, Gowganda and in the old Cobalt camp itself, assist in keeping production fairly constant. The increase in gold production also assists in Ontario's silver output, as the gold from the Porcupine and Kirkland Lake camps carries an average of 16 ounces of silver to every 100 ounces of gold. A small amount of silver is also obtained as a refinery by-product from the nickel-copper ores of the Sudbury district.

In 1926, in the Cobalt area there were 16 producing mines: in the South Lorrain field, 5 mines were on the producing list; and in Gowganda, 3 mines. The Nipissing mine was the principal silver producer in these districts. Other large mines, in order of production, were: Keeley, Frontier Lorrain, Castle Tretheway, O'Brien, McKinley-Darragh-Savage, Tonopah Canadian, and Lorrain Trout Lake. (See footnote.)

Only one mining company in Ontario, the Nipissing Mining Company, Limited, produced refined silver bullion in 1926. Other mines shipped ore either to this company or to the Deloro Smelting and Refining Company, or to foreign smelters. The greater part of the silver from the ores and concentrates treated by the Nipissing Mining Company is extracted by cyanidation, and the residues, which may contain arsenic, cobalt, nickel and some silver, are exported for treatment in foreign smelters. There were 37 mines in operation in the silver-cobalt industry in 1926, of which 24 made shipments. The number of operators remained unchanged at 33. The output of ores was 336,066 tons, the quantity milled amounted to 326,510 tons, and the concentrates produced totalled 6,095 tons. There were 83,980 tons of material cyanided. Silver bullion production amounted to 2,991,440 ounces.

Shipments of ores and concentrates to points outside the camp amounted to 7,752 tons in 1926, as against 8,086 tons during 1925.

The capital employed in the silver-cobalt mining industry showed a marked decline to \$40,504,721 in 1926 from \$44,045,619 in 1925. Production of ores and concentrates was slightly less than in the previous year and since only one property was operating a refinery in 1926, as compared with two in 1925, silver bullion production at the mines showed a decrease; but, as the company which formerly operated a refinery shipped to an Ontario smelter instead of refining at the mine, production of bullion by that Ontario smelter showed a marked increase. Shipments from the mines, therefore, reached a value of \$5,470,433, as against \$6,611,644 in 1925.

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Mining and milling only are being considered in this chapter: smelting of the cobalt ores, in so far as Canadian operations are concerned, is described in the chapter on the "The Non-Ferrous Smelting and Refining Industry."

Salaried officials numbered 156 in 1926 as against 136 in 1925. Wage-earners averaged 1,623 persons, of whom 943 were employed in the mines, 428 on the surface and 252 in the mills. Salaries and wages totalled \$2,815,930. Fuel used cost \$518,907 at the mines; this sum included \$310,806 spent for electric power. Powers equipment employed exclusive of boilers consisted of 224 units having a total rating of 9,244 h.p.

**Table 143.—\*Principal Statistics of the Silver-Cobalt Mining Industry in Canada, 1922-1926**

Year	Number of active operators	Number of operating mines	Capital employed	Number of employees	Salaries and wages	Miscellaneous expenses	Cost of fuel and electricity	Net value of bullion ore, concentrates and residues shipped
			\$		\$	\$	\$	\$
1922.....	26	30	29,459,603	1,403	1,532,736	† 2,271,186	† 98,242	8,374,411
1923.....	18	24	31,334,050	1,408	1,949,738	2,132,114	410,089	6,521,853
1924.....	26	34	41,013,466	1,769	2,534,304	2,479,316	468,651	6,594,032
1925.....	33	38	44,045,619	1,788	2,576,414	†	498,874	6,611,644
1926.....	33	37	40,504,721	1,779	2,815,930	†	518,907	5,470,433

\*All plants in this industry are located in Ontario.

†In 1922 the cost of electricity was included with the miscellaneous expenses.

‡No data.

**Table 144.—\*Statistics of Silver-Cobalt Mine and Mill Operations in Canada, 1925 and 1926**

	1925	1926
Number of mines in operation.....	38	37
Ore mined.....	Tons 357,029	338,066
Ores treated.....	Tons 359,788	326,510
Tailings treated.....	Tons 6,449	6,095
Concentrates produced.....	Tons 176,511	83,980
Quantity of material cyanided.....	Tons 6,079,142	2,991,440
Bullion recovered.....	Fine Ounces 5,551,112	3,094,394
Bullion sold.....	Fine Ounces 3,823,921	1,924,693
Net value to operators.....	\$	

\*All plants in this industry are located in Ontario.

**Table 145.—Shipments of Ores, Concentrates and Residues from the Cobalt Camp, Ontario, 1925 and 1926**

Kind	Quantity	Gross value (a)	Net value (b)	Metallic content paid for		
				Silver	Cobalt	Copper
1925	Tons	\$	\$	fine oz.	lb.	lb.
To Canadian Smelters—						
Ores.....	1,921	1,011,011	977,495	1,320,503	460,567	.....
Concentrates and residues.....	3,074 d	1,252,378 d	1,136,025	1,708,152	261,886	.....
To Foreign Smelters—						
Concentrates.....	3,091	796,764	674,203	1,090,242	105,094	154,661
<b>Total.....</b>	<b>8,086</b>	<b>3,060,153</b>	<b>2,787,723</b>	<b>4,118,897</b>	<b>827,547</b>	<b>154,661</b>
1926						
To Canadian Smelters—						
Ores.....	759	1,618,222	1,441,851	2,389,598	314,834	.....
Concentrates and residues.....	3,996	1,616,252	1,520,009	2,651,587	435,063	.....
To Foreign Smelters—						
Concentrates and residues.....	2,997	618,879	583,880	926,857	364,448	69,502
<b>Total.....</b>	<b>7,752</b>	<b>3,853,353</b>	<b>3,545,740</b>	<b>5,968,042</b>	<b>1,114,345</b>	<b>69,502</b>

(a) Gross value means value of the metals paid for before deducting transportation and treatment charges, and include exchange premium received.

(b) Net value is actual amount received by operator.

(c) Includes 910 ounces silver in nuggets shipped to Ontario Provincial Government.

(d) Includes \$674 paid for nuggets shipped to Ontario Provincial Government.

Table 146.—\*Capital Employed in the Silver-Cobalt Mining Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
Capital employed as represented by—		
Cost of lands, buildings, and equipment.....	34,024,247	31,412,576
Cost of supplies and stock on hand.....	1,657,085	998,390
Cash, trading and operating accounts and bills receivable.....	8,364,287	8,093,755
<b>Total.....</b>	<b>44,045,619</b>	<b>40,504,721</b>

\*All plants in this industry are located in Ontario.

Table 147.—\*Employees, Salaries and Wages in the Silver-Cobalt Mining Industry in Canada, 1925 and 1926

	1925		1926	
	Number	Salaries and wages	Number	Salaries and wages
		\$		\$
SALARIED EMPLOYEES—				
Total.....	136	358,190	156	400,403
WAGE-EARNERS—				
Mine.....	1,488	2,218,224	1,371	2,415,527
Mill.....	164		252	
Total.....	1,652	2,218,224	1,623	2,415,527
<b>Total.....</b>	<b>1,788</b>	<b>2,576,414</b>	<b>1,779</b>	<b>2,815,930</b>

\*All plants in this industry are located in Ontario.

Table 148.—\*Wage-Earners in the Silver-Cobalt Mining Industry in Canada by Months, 1925 and 1926

Month	1925				1926			
	Mine		Mill	Total	Mine		Mill	Total
	Surface	Under-ground			Surface	Under-ground		
January.....	403	954	174	1,531	402	874	220	1,496
February.....	392	913	169	1,474	373	877	206	1,456
March.....	389	922	173	1,484	371	911	219	1,501
April.....	414	956	170	1,540	352	915	211	1,478
May.....	416	966	166	1,548	381	887	212	1,480
June.....	447	992	163	1,602	417	875	198	1,490
July.....	409	1,030	164	1,603	415	878	208	1,501
August.....	468	1,002	162	1,632	434	866	233	1,533
September.....	491	1,008	163	1,662	459	894	239	1,592
October.....	502	1,030	162	1,694	449	870	241	1,560
November.....	508	1,008	159	1,675	382	859	237	1,478
December.....	462	981	160	1,603	334	845	247	1,426

\*All plants in this industry are located in Ontario

**Table 149.—\*Fuel and Electricity Used in the Silver-Cobalt Mining Industry in Canada, 1925 and 1926**

Kind	Unit of measure	1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Bituminous coal.....	Tons	7,532	98,430	9,887	111,941
Anthracite coal.....	Tons	615	9,629	910	14,630
Coke.....	Tons	91	1,254	93	1,141
Gasoline.....	Imp. gal.	24,559	7,902	32,273	11,912
Oil (fuel).....	Imp. gal.	237,978	40,783	128,655	19,526
Wood.....	Cords	7,223	44,146	3,893	19,518
Other fuel.....			38,722		29,433
Electric power.....	K.W.H.	18,204,808	258,008	10,929,461	310,806
<b>Total.....</b>			<b>498,874</b>		<b>518,907</b>

\*All plants in this industry are located in Ontario.

**Table 150.—\*Power Employed in the Silver-Cobalt Mining Industry in Canada, 1925 and 1926**

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	14	630	13	665
Gas engines.....	1	160	1	60
Oil and gasoline engines.....	2	400	3	465
<i>Total primary power.....</i>	<i>17</i>	<i>1,190</i>	<i>17</i>	<i>1,190</i>
Electric motors run by purchased power.....	208	7,707	207	8,054
<b>Total power employed.....</b>	<b>225</b>	<b>8,897</b>	<b>224</b>	<b>9,244</b>
Electric motors run by primary power in same plant.....			1	4
<i>Total electric motors.....</i>	<i>208</i>	<i>7,707</i>	<i>208</i>	<i>8,058</i>
Boilers.....	13	1,785	27	1,600

\*All plants in this industry are located in Ontario.

### 3. The Silver-Lead-Zinc Mining Industry

#### CANADA

Producing, concentrating, smelting and refining of ores of the silver-lead-zinc group is an industry that is fairly well confined to the province of British Columbia; but as already noted there are lead-zinc properties in the Yukon, at the Galetta property in Ontario and at Notre Dame des Anges in Quebec.

The Consolidated Mining and Smelting Company, Limited, of Trail, B.C., in addition to buying ores and concentrates for the smelter, operate a large customs concentrator which is of great assistance to the smaller mines within a reasonable shipping distance. This service was first made available in 1925 when 13,000 tons were concentrated; 81,700 tons were treated in 1926.

As defined above, the silver-lead-zinc industry was represented by 127 mines operated by 108 concerns in 1926. Ore raised from these mines totalled 1,565,158 tons of which 1,529,259 were milled. Shipments of lead ores, lead concentrates, zinc ore, zinc concentrates and dry ore

from the mines during the year totalled 498,015 tons valued at \$26,190,034. As determined by settlement assay, the total metal contents of these shipments included 6,243 ounces of gold, 9,524,925 ounces of silver, 290,349,316 pounds of lead, and 218,166,261 pounds of zinc.

Comparable statistics for 1925 show that 94 mines operated by 89 concerns raised 1,474,764 tons of ore of which 1,392,892 tons were milled, yielding 173,665 tons of lead concentrates and 173,894 tons of zinc concentrates. Shipments of lead ores, lead concentrates, zinc ore, zinc concentrates and dry ore from the mines during 1925 totalled 381,760 tons valued at \$21,902,686. As determined by settlement assay the total metal content of these shipments included 2,356 ounces of gold, 6,701,313 ounces of silver, 250,184,565 pounds of lead and 177,401,660 pounds of zinc.

Capital employed in this industry in 1926 was \$22,699,417 including over 17 million dollars in costs of buildings, plant, machinery and tools, about 1 million dollars for costs of supplies and stocks on hand, and 4.6 million dollars in cash, trading and operating accounts. Salaries totalling over \$419,000 were paid to 197 people, and wages amounting to over 4 million dollars were distributed among 2,727 workers. More than two-thirds of the capital invested and about three-quarters of the total wages paid in the industry, were reported by British Columbia operators, thus lending emphasis to the statement made above regarding the importance of silver-lead-zinc mining in British Columbia. Fuel used during the year cost \$658,679 including \$348,741 paid for electric power.

#### QUEBEC

Mining of silver-lead-zinc ores in Quebec is carried on in the vicinity of Notre Dame des Anges where ore was discovered in 1910. Several early attempts to concentrate this ore failed but more recently, as the result of a selective flotation process, worked out by the *Mines Branch*, Ottawa, about the end of 1924, economic recovery of silver-lead and zinc has been successful. During 1926 there were 20,415 tons of lead and zinc concentrates shipped to foreign smelters, the greater part of which went to Belgium for smelting.

#### ONTARIO

Although a small amount of lead is produced from the silver-cobalt ores, the greater part of Ontario's lead production is derived from the lead mine at Galetta in Carleton county. The ore of this mine carried no silver and only a small amount of zinc. A separation is made of the zinc and lead concentrates, the zinc concentrates being accumulated for shipment to foreign smelters; the galena is smelted to high-grade pig lead on the property.

#### BRITISH COLUMBIA

In 1926 British Columbia held first place among the silver-producing provinces, and first place among the provinces producing lead and zinc. About 30 per cent of the Dominion total of silver, 94 per cent of the lead, and 90.5 per cent of the zinc were obtained from the smelting of silver-lead-zinc ores mined in British Columbia. In this province production of these three metals has increased remarkably during the past four years. With the early development of the silver-lead ores of the Kootenays, silver production reached about the 5-million ounce mark in 1897, only to fall away to about 3 million ounces in 1899. Again, in 1901, the 5-million ounce mark was reached but by 1911 production had fallen to less than 2 million ounces. From that time forward, the output increased; first, through the demand created by the war, and later as a result of the development of the Premier mine in northern British Columbia.

Application of flotation methods in the treatment of silver-lead-zinc ores enabled producers to increase their mine outputs. Another factor contributing to the growth was the rise in the prices of lead and zinc and the maintenance of these prices at generally high levels. Increased production of the famous Sullivan lead and zinc mine also added appreciably to the silver output; indeed, this mine, though nominally a lead-zinc property was, in 1926, the largest silver-producing mine in Canada.

The Trail smelter buys silver-lead-zinc ores but much silver and some lead are also contained in ores exported by the mines on the coast; most of these ores are mined primarily for their copper and gold values but the other associated metals, including silver, are recovered in the smelting process.

## YUKON

In the Yukon the Keno Hill district is the principal producer of silver and lead. According to a report given to the *Mining Lands Branch* of the Department of the Interior by the Gold Commissioner of the Yukon, it has been shown that ore values continue with depth. In 1926 four mines reported to the Bureau as having shipped ore and concentrates. The Treadwell-Yukon Company, the largest producer in the district, completed a concentrator in the summer of 1925 that has worked to full capacity since it was built. Ores from neighbouring mines are treated in the mill, and this feature is much appreciated by the smaller operators who have thus been able to continue development work with the proceeds from the sales of their ores.

**Table 151.—Principal Statistics of the Silver-Lead-Zinc Mining Industry in Canada, 1922-1926**

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net value of ores and concentrates shipped
			\$		\$	\$	\$	\$
*1922.....	75	91	6,828,980	994	1,371,645	1,150,595	83,530	4,173,812
1923.....	87	93	9,203,997	1,352	2,024,752	1,667,932	257,574	6,620,067
1924.....	82	94	12,323,511	1,936	2,943,635	802,882	474,343	16,600,970
1925.....	89	94	15,735,930	2,538	3,867,613	†	584,121	21,902,686
1926.....	108	127	22,699,417	2,924	4,431,730	†	653,679	26,190,034

\* For 1922 cost of electricity included in miscellaneous expenses.

† No data.

**Table 152.—Shipments of Lead Ores and Concentrates from Canadian Mines, 1913-1926**

Year	Shipment		Lead content in pounds	Silver content in ounces
	Tons	Value \$		
1913.....	85,978	3,276,812	53,807,570	2,564,155
1914.....	70,207	2,652,802	50,527,130	2,501,820
1915.....	73,752	2,958,394	48,708,005	2,954,175
1916.....	84,516	4,568,500	54,124,628	2,582,952
1917.....	46,799	3,866,862	38,696,116	1,670,064
1918.....	75,256	4,705,573	46,843,602	2,314,542
1919.....	54,508	3,044,839	32,147,989	2,185,376
1920.....	69,493	2,985,848	36,325,507	2,882,178
1921.....	15,259	671,313	9,517,616	989,374
1922.....	27,203	1,803,575	21,335,850	2,163,637
1923.....	76,886	4,692,755	66,770,926	3,745,129
1924.....	153,396	12,290,699	180,187,124	4,348,243
1925.....	208,588	15,420,756	237,675,311	6,024,213
1926.....	255,048	17,546,728	273,963,827	8,616,164

Table 153.—Shipments of Zinc Ores and Concentrates from Canadian Mines, 1898-1926

Year	Shipment		Metallic zinc shipped	Year	Shipment		Metallic zinc shipped
	Tons	Value	Pounds		Tons	Value	Pounds
		\$				\$	
1898.....	1,162	11,000	788,000	1912.....	6,415	215,149	5,354,700
1899.....	865	18,165	814,000	1913.....	7,889	186,827	7,069,800
1900.....	261	4,810	212,000	1914.....	10,893	262,563	9,101,460
1901*.....	158	1,659	142,200	1915.....	14,895	554,938	12,231,439
1902.....	1,000	10,500	900,000	1916.....	82,077	1,086,249	48,498,078
1903.....	597	3,700	477,568	1917.....	110,489	1,323,985	64,655,713
1904.....	9,413	139,200	*	1918.....	121,200	1,228,195	63,026,464
1905.....	1,154	23,800	*	1919.....	135,535	1,049,493	59,959,709
1906.....	1,573	49,100	*	1920.....	249,136	1,157,844	91,033,202
1907.....	452	3,215	*	1921.....	297,406	1,498,716	98,799,093
1908.....	18,371	242,699	16,468,204	1922.....	356,096	2,357,849	102,975,964
1909†.....	5,063	120,003	4,361,712	1923.....	279,229	1,853,114	96,148,734
1910.....	2,590	101,072	2,346,849	1924.....	191,309	4,310,271	129,643,631
1911.....				1925.....	173,172	6,481,930	153,980,628
				1926.....	242,967	8,643,306	183,393,023

\* Figures not available. † Includes 7,424 tons shipped late in 1908.

Table 154.—Ore Mined and Milled in the Silver-Lead-Zinc Mining Industry, in Canada, 1925 and 1926

Production	Quebec and Ontario	British Columbia	Yukon	Canada
	Tons	Tons	Tons	Tons
1925				
Ore mined.....	163,634	1,282,741	28,389	1,474,764
Ore milled.....	163,634	1,188,823	40,435	1,392,892
Concentrates produced—lead.....	6,632	164,459	2,524	173,665
Concentrates produced—zinc.....	15,157	158,737	.....	173,894
1926				
Ore mined.....	241,444	1,277,016	46,698	1,565,158
Ore milled.....	255,657	1,229,505	44,097	1,529,259
Concentrates produced—lead.....	7,893	170,213	2,813	180,919
Concentrates produced—zinc.....	16,207	174,474	.....	190,681

Table 155.—Products Shipped by Silver-Lead-Zinc Mines in Canada, 1925 and 1926

Location of mines	No. of mines shipping	Products shipped	Quantity shipped	Net value at shipping point	Total metal content as determined by settlement assay			
					Gold	Silver	Lead	Zinc
			Tons	\$	Oz.	Oz.	Lb.	Lb.
1925								
Quebec and Ontario.	3	Lead ore.....						
		Lead concentrates.....	7,291	821,728	1,090	166,500	9,425,591	437,900
		Zinc concentrates.....	13,531	515,645	744	66,700	304,300	12,644,431
		Total.....	20,822	1,337,373	1,834	233,200	9,729,891	13,082,331
British Columbia....	77	Lead ore.....	33,952	1,860,599	306	1,129,892	18,959,165	3,228,064
		Lead concentrates.....	164,428	11,988,836	146	3,757,375	207,202,725	19,755,026
		Zinc ore.....	886	39,107	15	46,196	62,017	639,683
		Zinc concentrates.....	158,755	5,927,178	55	564,204	12,142,937	140,696,514
		Dry ore.....	1,009	14,761		29,252	4,000	42
		Total.....	359,030	19,830,481	522	5,526,919	238,370,844	164,319,329
Yukon.....	2	Lead ore.....	616	120,648		150,271	730,353	
		Lead concentrates.....	1,292	614,184		790,923	1,353,477	
		Total.....	1,908	734,832		941,194	2,083,830	
Canada.....	82		381,760	21,902,686	2,356	6,701,313	250,184,565	177,401,660
1926								
Quebec and Ontario.	2	Lead ores.....						
		Lead concentrates.....	8,755	725,709	2,190	280,311	11,490,219	405,120
		Zinc concentrates.....	16,195	703,000	2,000	134,766	421,070	16,130,220
		Total.....	24,950	1,428,709	4,190	415,077	11,911,289	16,535,340
British Columbia....	88	Lead ore.....	64,696	2,646,294	1,255	1,836,211	31,829,836	10,683,632
		Lead concentrates.....	170,313	12,799,797	292	4,185,244	224,719,733	18,656,605
		Zinc ore.....	52,507	982,358	165	274,839	3,478,938	14,133,599
		Zinc concentrates.....	174,265	6,957,948	2	499,156	12,485,481	158,129,209
		Dry ore.....	5,938	152,559	101	298,693	12,240	17,143
		Total.....	467,719	23,538,956	1,815	7,094,133	272,526,228	201,620,188
Yukon.....	4	Lead ore.....	2,617	262,152	45	375,640	3,046,769	10,733
		Lead concentrates.....	2,729	960,217	193	1,640,075	2,865,030	
		Total.....	5,346	1,222,369	238	2,015,715	5,911,799	10,733
Canada.....	94		498,015	26,190,034	6,243	9,524,925	290,349,316	218,166,261

Table 156.—Destination of Shipments from Silver-Lead-Zinc Mines in Canada, 1925 and 1926

Product shipped	Tons shipped	Net value at shipping point	Total metal content as determined by settlement assay			
			Gold	Silver	Lead	Zinc
1925		\$	Oz.	Oz.	Lb.	Lb.
To Canadian Smelters—						
Lead ore.....	33,699	1,835,748	286	1,093,184	18,938,416	3,206,969
Lead concentrates.....	158,620	11,846,201	146	3,550,724	201,066,238	18,439,838
Zinc ore.....	886	39,107	15	46,196	62,017	639,683
Zinc concentrates.....	129,099	4,337,320	55	518,912	10,004,727	112,910,307
Dry ore.....	1,009	14,761	.....	29,252	4,000	42
<b>Total.....</b>	<b>323,313</b>	<b>18,573,137</b>	<b>502</b>	<b>5,238,268</b>	<b>230,075,398</b>	<b>135,196,839</b>
To Foreign Smelters—						
Lead ore.....	869	145,499	20	186,979	751,102	21,095
Lead concentrates.....	14,391	1,578,547	1,090	1,164,074	16,915,555	1,753,088
Zinc concentrates.....	43,187	1,605,503	744	111,992	2,442,510	40,430,638
<b>Total.....</b>	<b>58,447</b>	<b>3,329,549</b>	<b>1,854</b>	<b>1,463,045</b>	<b>20,109,167</b>	<b>42,204,821</b>
1926						
To Canadian Smelters—						
Lead ore.....	64,689	2,645,744	1,253	1,835,269	31,826,280	10,682,022
Lead concentrates.....	174,848	13,167,106	292	4,185,244	232,065,912	18,656,605
Zinc ore.....	43,897	798,191	160	265,174	3,234,204	11,707,005
Zinc concentrates.....	158,530	6,303,530	2	468,833	11,577,126	143,180,008
Dry ore.....	5,936	152,546	99	298,630	12,044	16,737
<b>Total.....</b>	<b>447,900</b>	<b>23,067,117</b>	<b>1,806</b>	<b>7,053,150</b>	<b>278,715,566</b>	<b>184,242,377</b>
To Foreign Smelters—						
Lead ore.....	2,624	262,702	47	376,582	3,050,325	12,343
Lead concentrates.....	6,949	1,318,617	2,383	1,920,386	7,009,070	405,120
Zinc ore.....	8,610	184,167	5	9,665	244,734	2,426,594
Zinc concentrates.....	31,930	1,357,418	2,000	165,089	1,329,425	31,079,421
Dry ore.....	2	13	2	53	196	406
<b>Total.....</b>	<b>50,115</b>	<b>3,122,917</b>	<b>4,437</b>	<b>2,471,775</b>	<b>11,633,750</b>	<b>33,923,884</b>

Table 157.—Capital Employed in the Silver-Lead-Zinc Mining Industry in Canada, 1925 and 1926

Province	Capital employed as represented by			
	Cost of lands, buildings and equipment	Cost of supplies and stock on hand	Cash trading and operating accounts and bills receivable	Total
1925	\$	\$	\$	\$
Quebec.....	2,852,755	41,100	348,789	3,242,644
Ontario.....	867,256	68,567	13,910	949,733
British Columbia.....	5,775,632	658,466	2,751,499	9,185,597
Yukon.....	1,777,045	274,626	306,285	2,357,956
<b>Canada.....</b>	<b>11,272,688</b>	<b>1,042,759</b>	<b>3,420,483</b>	<b>15,735,930</b>
1926				
Quebec.....	2,815,000	49,100	465,000	3,329,100
Ontario.....	1,498,002	92,814	43,900	1,634,716
British Columbia.....	11,087,253	641,789	3,843,832	15,567,874
Yukon.....	1,617,627	276,535	273,565	2,167,727
<b>Canada.....</b>	<b>17,012,882</b>	<b>1,060,238</b>	<b>4,626,297</b>	<b>22,699,417</b>

**Table 158.—Employees, Salaries and Wages in the Silver-Lead-Zinc Mining Industry in Canada, 1925 and 1926**

Province	1925						1926					
	On salary	Mine		Mill	Total	Salaries and wages	On salary	Mine		Mill	Total	Salaries and wages
		Surface	Under-ground					Surface	Under-ground			
	No.	No.	No.	No.	No.	\$	No.	No.	No.	No.	No.	\$
Quebec.....	11	74	130	69	284	262,838	13	95	112	25	245	300,878
Ontario.....	9	8	119	38	174	249,314	23	40	54	117	234	344,128
British Columbia.....	120	627	890	323	1,960	3,138,965	141	652	1,077	389	2,259	3,443,483
Yukon.....	10	53	47	10	120	216,496	20	68	86	12	186	343,241
<b>Canada.....</b>	<b>150</b>	<b>762</b>	<b>1,186</b>	<b>440</b>	<b>2,538</b>	<b>3,867,613</b>	<b>197</b>	<b>855</b>	<b>1,329</b>	<b>543</b>	<b>2,924</b>	<b>4,431,730</b>

**Table 159.—Wage-Earners in the Silver-Lead-Zinc Mining Industry in Canada, by Months, 1925 and 1926**

Month	1925			1926		
	Surface	Under-ground	Total	Surface	Under-ground	Total
January.....	845	946	1,791	980	1,198	2,178
February.....	845	971	1,816	939	1,169	2,108
March.....	877	942	1,819	1,011	1,104	2,115
April.....	932	943	1,875	1,028	1,103	2,131
May.....	1,048	968	2,016	1,260	1,081	2,341
June.....	1,128	1,058	2,186	1,361	1,148	2,509
July.....	1,153	1,068	2,221	1,390	1,192	2,582
August.....	1,193	1,154	2,347	1,405	1,243	2,648
September.....	1,271	1,204	2,475	1,503	1,246	2,749
October.....	1,308	1,244	2,552	1,515	1,236	2,751
November.....	1,263	1,226	2,489	1,287	1,199	2,486
December.....	1,066	1,169	2,235	1,143	1,169	2,312

**Table 160.—Fuel and Electricity Used in the Silver-Lead-Zinc Mining Industry in Canada, by Provinces, 1925 and 1926**

Kind	—	Quebec	Ontario	British Columbia	Yukon	Canada
<b>1925</b>						
Bituminous coal.....	Tons	400	286	16,376	.....	17,062
	\$	3,410	2,017	116,021	.....	121,448
Anthracyte coal.....	Tons	.....	.....	.....	.....	.....
	\$	.....	.....	.....	.....	.....
Lignite coal.....	Tons	.....	.....	.....	.....	.....
	\$	.....	.....	.....	.....	.....
Coke.....	Tons	60	418	130	.....	608
	\$	609	3,217	1,543	.....	5,369
Gasoline.....	Gals.	.....	.....	14,261	33,447	47,708
	\$	.....	.....	5,117	37,091	42,208
Oil (fuel).....	Gals.	.....	.....	77,241	94,830	172,071
	\$	.....	.....	11,940	55,582	67,522
Wood.....	Cords	1,855	.....	3,880	609	6,344
	\$	6,473	.....	17,800	16,059	40,332
Other fuel.....	\$	.....	.....	40	.....	49
Electric power.....	K.W.H.	3,741,698	912,800	34,333,925	772,620	39,761,043
	\$	26,356	13,692	204,394	62,760	397,232
<b>Total.....</b>	<b>\$</b>	<b>36,848</b>	<b>18,926</b>	<b>356,855</b>	<b>171,492</b>	<b>584,121</b>
<b>1926</b>						
Bituminous coal.....	Tons	734	751	19,471	20	29,976
	\$	6,973	7,063	102,849	2,850	119,735
Anthracyte coal.....	Tons	30	34	.....	.....	64
	\$	506	558	.....	.....	1,064
Lignite coal.....	Tons	.....	.....	45	.....	45
	\$	.....	.....	360	.....	369
Coke.....	Tons	.....	442	57	.....	499
	\$	.....	3,395	513	.....	3,908
Gasoline.....	Gals.	.....	1,271	39,987	41,072	82,330
	\$	.....	448	13,680	41,515	55,643
Oil (fuel).....	Gals.	108	.....	55,871	105,206	161,185
	\$	38	.....	11,262	59,625	70,925
Wood.....	Cords	818	.....	2,709	2,226	5,753
	\$	2,968	.....	17,748	37,563	55,279
Other fuel.....	\$	.....	24	.....	.....	24
Electric power.....	K.W.H.	2,980,400	940,600	44,614,299	860,205	49,395,504
	\$	29,804	14,109	236,012	68,816	348,741
<b>Total.....</b>	<b>\$</b>	<b>40,289</b>	<b>25,597</b>	<b>382,424</b>	<b>210,369</b>	<b>658,679</b>

Table 161.—Power Employed in the Silver-Lead-Zinc Mining Industry in Canada, by Provinces, 1925 and 1926

Description	—	Quebec	Ontario	British Columbia	Yukon	Canada
1925						
Steam engines and turbines.....	No. of units H.P.	3 245	.....	18 1,425	1 100	22 1,770
Internal combustion engines.....	No. of units H.P.	.....	.....	17 618	6 368	23 986
Hydraulic turbines or water wheels.....	No. of units H.P.	.....	.....	24 3,469	.....	24 3,469
<i>Total primary power.....</i>	<i>No. of units H.P.</i>	<i>3 245</i>	.....	<i>59 5,602</i>	<i>7 468</i>	<i>69 6,225</i>
Electric motors run by purchased power.....	No. of units H.P.	26 1,235	25 675	30 3,941	.....	81 5,851
<b>Total power employed.....</b>	<b>No. of units H.P.</b>	<b>29 1,480</b>	<b>25 675</b>	<b>89 9,453</b>	<b>7 468</b>	<b>150 12,076</b>
Electric motors run by primary power in same plant.....	No. of units H.P.	.....	.....	19 640	17 250	36 890
<i>Total electric motors.....</i>	<i>No. of units H.P.</i>	<i>26 1,235</i>	<i>25 675</i>	<i>49 4,581</i>	<i>17 250</i>	<i>117 6,741</i>
Boilers.....	No. of units H.P.	8 395	.....	8 510	3 190	19 1,095
1926						
Steam engines and turbines.....	No. of units H.P.	2 120	3 150	13 1,125	1 100	19 1,495
Internal combustion engines.....	No. of units H.P.	1 6	1 3	26 959	7 413	35 1,381
Hydraulic turbines or water wheels.....	No. of units H.P.	.....	.....	29 2,865	.....	29 2,865
<i>Total primary power.....</i>	<i>No. of units H.P.</i>	<i>3 126</i>	<i>4 153</i>	<i>68 4,949</i>	<i>8 513</i>	<i>83 5,741</i>
Electric motors run by purchased power.....	No. of units H.P.	31 1,164	25 675	54 5,066	.....	110 6,905
<b>Total power employed.....</b>	<b>No. of units H.P.</b>	<b>34 1,290</b>	<b>29 825</b>	<b>122 10,015</b>	<b>8 513</b>	<b>193 12,646</b>
Electric motors run by primary power in same plant.....	No. of units H.P.	.....	1 5	14 387	20 213	35 605
<i>Total electric motors.....</i>	<i>No. of units H.P.</i>	<i>31 1,164</i>	<i>26 680</i>	<i>68 5,453</i>	<i>20 213</i>	<i>146 7,510</i>
Boilers.....	No. of units H.P.	4 270	2 120	16 1,715	3 129	25 2,234

#### 4.—Commodity Statistics—including tables showing production by provinces, imports, exports, prices, and world output of Arsenic, Cobalt, Silver, Lead, and Zinc.

##### ARSENIC

Arsenic production from Canadian ores in 1926 amounted to 5,074,677 pounds including sales of white arsenic amounting to 3,984,217 pounds and the recoverable arsenic contained in export shipments of concentrates and residues, amounting to a further 1,090,460 pounds of white arsenic. The value of the total Canadian production was \$146,811 in 1926 as compared with \$130,302 for 3,434,137 pounds marketed in 1925. The average price of arsenic on the New York market in 1926 was 3·5 cents per pound as against 4·66 cents in 1925.

The greater part of the Canadian production of arsenic is obtained from the south Ontario smelters as a by-product from the treatment of ores mined in Cobalt district. A small amount is also contained in residues exported from these smelters. British Columbia's annual production of arsenic is contained in concentrates shipped from the Nickel Plate gold mine to the Tacoma smelter for further treatment. No production of arsenic from the arsenical gold ores of Nova Scotia was reported for 1926.

Arsenic is used mainly in the manufacture of insecticides, for which the principal market is found in the cotton-growing areas of the southern United States where it is largely used in the control of the boll-weevil, an insect which is very destructive to the southern cotton crop. The glass and tanning industries also consume considerable quantities of white arsenic.

Imports into Canada, of white arsenic during the year amounted to 144,031 pounds having a value of \$5,604. Exports of white arsenic amounted to 3,344,000 pounds valued at \$108,120.

Table 162.—Production of Arsenic in Canada, 1885-1924

Year	White Arsenic		Year	Arsenic in Ore*		White Arsenic	
	Tons	Value		Tons	Value	Tons	Value
		\$			\$		\$
1885.....	440	17,600	1907.....	656	11,094	330	36,209
1886.....	120	5,460	1908.....	986	17,506	716	41,060
1887.....	30	1,200	1909.....	224	3,346	1,129	64,100
1888.....	30	1,200	1910.....	547	5,716	1,502	75,328
1889.....			1911.....			2,097	76,237
1890.....	25	1,500	1912.....			2,045	89,262
1891.....	20	1,000	1913.....			1,692	101,463
1892-3.....			1914.....			1,737	104,015
1894.....	7	420	1915.....			2,396	147,830
1895-8.....			1916.....			2,186	262,349
1899.....	57	4,872	1917.....	280	11,200	2,656	653,231
1900.....	303	22,725	1918.....	1,078	43,114	2,482	520,525
1901.....	695	41,676	1919.....	530	21,218	2,859	488,706
1902.....	800	48,000	1920.....	628	22,231	1,831	425,617
1903.....	257	15,420	1921.....			1,491	233,763
1904-5.....			1922.....	518	21,097	2,058	299,940
1906.....	201	14,058	1923.....	631	44,030	2,579	582,785
			1924.....	513	39,185	1,798	309,108
			1925.....	714	21,513	1,003	108,789
			1926.....	545	12,637	1,992	134,124
			<b>Total.....</b>	<b>7,850</b>	<b>273,937</b>	<b>39,564</b>	<b>4,934,572</b>

\* Computed as  $As_2O_3$ : net value as reported by the operators.

Table 163.—Production, Exports and Imports of Arsenic, ( $As_2O_3$ ), for Canada, 1924-1926

	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
From arsenical concentrates exported.. lb.	1,025,402	39,185	1,428,885	21,513	1,090,460	12,687
White arsenic..... lb.	3,596,165	309,108	2,005,252	108,789	3,934,217	134,124
<b>Total..... lb.</b>	<b>4,621,567</b>	<b>348,293</b>	<b>3,434,137</b>	<b>130,302</b>	<b>5,074,677</b>	<b>146,811</b>
<b>EXPORTS—</b>						
White arsenic in arsenical concentrates..... lb.	1,090,000	28,360	972,000	10,590	*	*
Arsenic, n.o.p..... lb.	2,608,000	227,331	1,762,000	97,748	3,344,000	108,120
<b>IMPORTS—</b>						
White arsenic..... lb.	3,105	319	498,720	30,305	144,031	5,604
Sulphide of arsenic..... lb.	14,387	2,008	21,810	2,974	68,829	3,136
Arseniate of soda..... lb.	1,687	220	6,361	1,709	15,357	3,151

\* Included in arsenic, n.o.p.

Table 164.—Monthly Average Prices of Arsenic, 1924-1926

(From *Engineering and Mining Journal*)

Month	New York, in cents per pound		
	1924	1925	1926
January.....	13.50	6.00	3.00
February.....	13.00	5.75	3.25
March.....	12.50	5.75	3.25
April.....	11.00	5.75	3.25
May.....	10.50	5.25	3.50
June.....	9.50	4.75	3.50
July.....	8.50	4.50	3.50
August.....	8.00	4.00	3.50
September.....	7.75	3.75	3.50
October.....	7.50	3.50	3.50
November.....	7.00	3.50	3.50
December.....	6.75	3.25	3.50
<b>Average.....</b>	<b>9.63</b>	<b>4.65</b>	<b>3.40</b>

Table 165.—World Production of Arsenic Ore and White Arsenic, 1921-1926

(Metric tons)

From the *Mineral Resources of the United States, 1926*—Part I

Country and product	1921	1922	1923	1924	1925	1926
Algeria:						
Arsenate of lead—						
Gross weight.....		160	2,270	9,325	6,750	1
Arsenic content.....		34	409	1,587	1,215	1
Australia:						
New South Wales—						
Ore and concentrates.....	1,117	1	11,677	4,487	3,400	1
White arsenic.....	403	296	367	328	301	1
Queensland—						
Ore.....	1	1	1	1	1,133	1
White arsenic.....	224	406	620	573		1
South Australia—						
Ore—						
Gross weight.....				69	102	1
Arsenic content.....				1	1	1
Victoria—						
White arsenic.....	1	1	1,036	437	1	1
Western Australia—						
Ore <sup>2</sup> —						
Gross weight.....	7	1,092				1
Arsenic content.....	1	1				1
Austria:						
Ore <sup>3</sup> —						
Gross weight.....				560	89	1
Arsenic content.....				40	15	1
Arsenic content of gold ores.....	38	103	136	216	237	1
Belgium:						
White arsenic.....	4	1,008	1,380	1,850	1	1
Brazil:						
White arsenic.....	127	154	162	146	1	1
Canada:						
White arsenic.....	1,353	1,867	2,340	1,631	910	1,808
Arsenic content of ores and concentrates <sup>2</sup> .....	1	470	572	465	648	495
China:						
Ore <sup>2</sup> .....	258	549	413	472	395	1
White arsenic <sup>2</sup> .....	100	30	176	237	94	1
Chosen:						
Ore.....	1	56	26		1	1
White arsenic.....	1	1	95		107 <sup>2</sup>	1
Czechoslovakia:						
Ore—						
Gross weight.....	1	1	24	217	1	1
Arsenic content.....	1	1	1	1	1	1
France:						
Ore.....	5,087	4,465	10,022	14,029	28,990	1
White arsenic.....	216	266	815	802	1	1
Germany:						
Ore and concentrates <sup>6</sup> —						
Gross weight.....	7,033	8,750	10,273	10,818	1	1
Arsenic content.....	2,342	2,958	3,363	3,499	1	1
Greece:						
White arsenic.....	768	967	1,176	1,096	1	1

Table 165.—World Production of Arsenic Ore and White Arsenic, 1921-1926—Con.

(Metric tons)

Country and product	1921	1922	1923	1924	1925	1926
Italy—						
Ore—						
Gross weight.....	60	450	206	147	4	1
Arsenic content.....	23	81	46	33	1	1
Japan:						
Ore.....	1,506	2,295	4,245 <sup>a</sup>	7,416	1	1
White arsenic.....	1,395	1,922	4,287	3,703	3,485	1
Mexico:						
White arsenic.....	785	272 <sup>7</sup>	1,402	2,551	4,193	6,460
Norway:						
Ore—						
Gross weight.....			577			1
Arsenic content.....			149			1
Peru:						
Ore.....	1	1	232		1	1
Arsenic.....	1	1	115 <sup>a</sup>		119 <sup>9</sup>	1
Portugal:						
Ore.....	11	106	160	279	76	1
White arsenic.....	268	604	887	874	1,092	1
Rhodesia, Southern:						
Ore—						
Gross weight.....	327	451	774	533	170	1
Arsenic content.....	1	1	1	1	1	1
Sweden:						
Ore—						
Gross weight.....				80	110	1
Arsenic content.....				19	21	1
Switzerland:						
Ore—						
Gross weight.....	39	10	100	1	1	1
Arsenic content.....	1	1	1	1	1	1
Turkey:						
Ore—						
Gross weight.....	1	200 <sup>10</sup>	1	1	1	1
Arsenic content.....	1	1	1	1	1	1
Union of South Africa:						
White arsenic.....	2	3	5	96	31	1
United Kingdom:						
Ore.....		360	741	304	11	1
White arsenic and arsenic soot.....	1,049	994	1,631	3,258	2,586	1
United States:						
White arsenic.....	4,342	9,096	12,946	13,111	11,174	5,348

<sup>1</sup> Data not available.<sup>2</sup> Exports.<sup>3</sup> Exclusive of arsenical gold ores worked primarily for their gold and silver content.<sup>4</sup> No production reported. Declared exports of arsenic from Belgium to the United States in 1921 were 485 tons. No statement was made as to how much of this, if any, was of Belgian origin.<sup>5</sup> Data relate to concentrates produced and ore sold without concentration.<sup>6</sup> Incomplete figures, output of principal mines only.<sup>7</sup> Figures of Mexican Government. The Fenoles Co. reports 335 tons shipped.<sup>8</sup> Content of ore.<sup>9</sup> White arsenic exported by the Anglo-French Ticapampa Silver Mining Co. (Ltd.)<sup>10</sup> Year ended October 31.<sup>11</sup> Production reported, but figures not available for publication.

## COBALT

Cobalt production in 1926 showed a considerable decline from the previous year, the output amounting to 664,778 pounds valued at \$1,136,014 as against 1,116,492 pounds valued at \$2,328,517 in 1925. The decline in production was caused by the introduction into the world markets, of cobalt from central Africa where it occurs in association with copper in ores mined by the Union Minière du Haut Katanga. This company now produces about 45 per cent of the world's output and the Canadian production makes up the remaining 55 per cent.

Production figures for Canada include the cobalt content of the various cobalt products sold by the south Ontario smelters added to the cobalt content of the ores and residues exported for treatment in foreign smelters; the value given is the net amount received by the shippers.

Since the discovery of the Cobalt camp in 1903, by far the greater part of the world's supply of cobalt has been derived from the treatment of ores mined in that area. Two companies, the

Coniagas Reduction Company of Thorold, Ontario, (closed down in 1926) and the Deloro Smelting and Refining Company, Limited, at Deloro, Ontario, developed processes for the recovery of cobalt from these ores. A brief outline of the process follows:—

Reduction of the ore in a blast furnace produces a speiss containing silver, cobalt, nickel, a small amount of iron and other metals. The speiss is roasted to free it from arsenic; then chloridized and leached with sulphuric acid to extract the copper, and cyanided to dissolve the silver. Silver in the cyanide solution is precipitated by means of aluminium dust. The “speiss residues” then remaining are transferred to another plant where the cobalt and nickel in the form of oxides are extracted. In some cases the speiss residues are exported to foreign countries where the cobalt, nickel and silver are recovered.

Cobalt oxide is marketed either as black or gray oxide; the black oxide contains about 70 per cent cobalt metal and the gray, about 75 per cent cobalt metal. Gray oxide is made by giving the black oxide a slight roast in a reducing atmosphere in a reverberatory furnace. Cobalt salts of various kinds are also made, and if the pure metal is required, the black oxide is reduced in the reverberatory furnace using charcoal as the reducing agent.

The market for cobalt which was very poor in 1915 gradually improved during the war. No quotations on the New York market were available during 1918, 1919 and 1920. During 1921 the quotations given in the *Engineering and Mining Journal* ranged from \$3 to \$3.50 per pound; the former value was used in computing the annual production values. In 1922 the average price \$3.25 per pound, was used. In 1923, the quotation, \$2.85 was used, but from 1924 to date the values given in the report have been based on the returns actually received by the operators for the products sold. In 1925 the market quotations for cobalt were: metal, \$2.50 per pound; cobalt oxide, \$2.10 per pound.

**Bounties.**—Under the provisions of the *Metal Refining Bounty Act*, passed by the Ontario Legislature in 1907, bounties were paid to refineries amounting to \$126,987.08 on cobalt metal, cobalt oxide, and salts of cobalt, and \$43,153.85 on nickel oxide, and salts of nickel, or a total for both cobalt and nickel of \$170,140.93. The quantities produced and the bounties paid each year are given in detail in the annual *Reports of the Ontario Bureau of Mines*.

The bounty was at the rate of 6 cents per pound on the metallic content of the oxides. The Act which expired in April 1917, was not re-enacted.

An historical summary of the production in Canada which dates from the year 1904 is shown in the following table. For the years 1904 to 1910 inclusive, the figures given were prepared by the Ontario Bureau of Mines, and represent the estimated cobalt content of the ores shipped from the mines. From 1911 to date, the quantities given are the cobalt content of all smelter products sold or shipped, such as cobalt metal, the oxides, mixed oxides and residues, etc.

Table 166.—\*Production of Cobalt from Canadian Ores, 1904-1926

Year	Pounds	Year	Pounds	Year	Pounds
1904.....	32,000	1913.....	865,937	1922.....	616,088
1905.....	236,000	1914.....	871,891	1923.....	760,105
1906.....	642,000	1915.....	504,212	1924.....	948,704
1907.....	1,478,000	1916.....	840,536	1925.....	1,116,492
1908.....	2,448,000	1917.....	1,079,572	1926.....	664,778
1909.....	3,066,000	1918.....	737,157		
1910.....	2,196,000	1919.....	530,371	<b>Total.....</b>	<b>22,798,945</b>
1911.....	1,704,000	1920.....	546,023		
1912.....	663,093	1921.....	251,986		

\*See preceding paragraph.

Table 167.—Production in Canada and Exports of Cobalt, 1924-1926

	1924		1925		1926	
	Pounds	\$	Pounds	\$	Pounds	\$
PRODUCTION— Cobalt, computed as cobalt in metal, oxides and salts sold, and in ores and residues exported.....	948,704	1,682,395	1,116,492	2,328,517	664,778	1,136,014
EXPORTS— Cobalt alloys, cobalt metallics, cobalt oxides, cobalt salts and cobalt ores.....		1,302,277		1,867,607		1,064,276

Table 168.—Imports of Cobalt into the United States, 1919-1926

(From *The Mineral Industry*, 1926)

Year	Ore		Cobalt		Zaffer		Oxide	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$		\$
1919.....	17,045	2,832	60,511	141,450			131,424	184,751
1920.....	13,039	4,794	143,603	326,864	220	14	202,724	399,605
1921.....	7,657	3,235	38,442	105,539			164,003	342,426
1922.....	5,195	7,075	126,364	321,396			217,530	435,895
1923.....	58,719	56,326	225,639	552,434			258,594	511,903
1924.....	27,786	37,276	118,952	264,935			226,703	440,898
1925.....	34,782	31,320	198,669	422,185			287,265	525,803
1926.....	154,468	55,820	387,076	820,873	110	40	333,132	632,478

## SILVER

## CANADA

**Production**—SPECIAL NOTE.—Prior to 1922, the method used in compiling the statistics on the silver production of Canada was to include, except for Ontario, the quantities of silver produced from Canadian ores either in Canadian or foreign smelters. For Ontario, the sales of silver bullion from the mines and smelters were considered as the year's production. In order to bring the practice for Ontario into harmony with that used in computing the silver output for the other provinces, adjustments amounting to 1,222,450 ounces were made for 1922 to take account of the stocks of silver bullion on hand at the end of 1921 which had not been previously included in the reports on the mineral production of Canada.

Production of silver from Canadian ores during 1926 amounted to 22,371,924 fine ounces which at the average price of 62·107 cents per ounce for the year, was valued at \$13,894,531 as against 20,228,988 fine ounces produced in 1925 and valued at \$13,971,150, when the average price was 69·065 cents per ounce. There was thus an increase of 10 per cent in quantity in 1926 in comparison with the totals for the previous year.

Production in 1926 included (a) silver contained in silver and gold bullion 8,153,296 fine ounces or 36·6 per cent of the total for Canada; (b) silver contained in blister copper and lead bullion 7,985,197 fine ounces or 35·6 per cent and (c) silver estimated to have been recovered from ores, concentrates, etc., exported, 6,233,431 fine ounces or 27·8 per cent. The corresponding figures for 1925 were (a) 10,219,359 fine ounces or 50·5 per cent; (b) 6,179,238 fine ounces or 30·5 per cent and (c) 3,830,391 fine ounces or 19 per cent.

Although no official statistics of the production of silver had been published prior to 1887, the annual reports of the operating companies showed that from 1869 to 1885 the total production amounted to about four million ounces of silver with a probable value of \$4,800,000. The producing mines were situated in the Port Arthur district in Ontario. From 1887 to 1893, production ranged in value between \$300,000 and \$400,000 and was derived chiefly from Ontario and Quebec. The next three years saw a rapid increase in production due to the development of the silver-lead deposits of British Columbia, and in 1897 an output value of more than \$3,000,000 was recorded. From that year until 1905, production values varied between \$2,000,000 and \$3,500,000 rising rapidly during the next six years to \$17,580,455 in 1910, as a result of the discovery of the rich ores of the Cobalt district. Since then there has been a falling-off in quantity,

but owing to the higher price of the metal, the value of the annual production increased to a maximum of \$20,693,704 in 1918. It will be noticed in the table of production that the output for 1919 though only 50 per cent of that of 1910 or 1911, when the production was at its maximum, was more than equal in value.

Ontario was the greatest silver-producing province from 1906 until 1925, its contribution increasing from 41 per cent of the total for Canada in 1905 to a maximum of 94 per cent in 1911. By 1914 the silver output of the province had fallen to 88·4 per cent of the Dominion aggregate. Further recessions followed each year until 1921 when Ontario's share stood at 25 per cent. In 1922, the proportion rose to 48·2 per cent, excluding the corrective figures included in that year, and further to 57·1 per cent in 1924, dropping to 52·2 per cent in 1925 and to 41·5 per cent in 1926.

Silver production from British Columbia was greater in 1926 than in any other year on record and exceeded the 1925 output by over 2 million ounces. For the first time since 1905 the silver output of British Columbia surpassed the Ontario total; production from this province alone amounting to 47·6 per cent of the total of the Dominion. The remainder of the Canadian production was made up as follows: Yukon, 9 per cent of Canada's total; Quebec, 1·8 per cent; and small quantities contained in the gold bullion from Nova Scotia and Manitoba.

Table 169.—Production of Silver in Canada, 1887-1926

Year	Fine ounces	Value	Cents per ounce	Year	Fine ounces	Value	Cents per ounce
		\$				\$	
1887.....	355,083	347,271	98·00	1908.....	22,106,233	11,686,239	52·36
1888.....	437,232	410,998	94·00	1909.....	27,529,473	14,178,504	51·50
1889.....	383,318	358,785	93·60	1910.....	32,869,264	17,580,455	53·49
1890.....	400,687	419,118	104·60	1911.....	32,559,044	17,355,272	53·30
1891.....	414,523	409,549	98·00	1912.....	31,955,560	19,440,165	60·83
1892.....	310,651	272,130	86·00	1913.....	31,845,803	19,040,924	59·79
1893.....	428,738	330,128	77·00	1914.....	28,449,821	15,593,631	54·81
1894.....	847,697	534,049	63·00	1915.....	26,625,960	13,228,842	49·68
1895.....	1,578,275	1,030,299	65·28	1916.....	25,459,741	16,717,121	65·66
1896.....	3,205,343	2,149,503	67·06	1917.....	22,221,274	18,091,895	81·417
1897.....	5,558,446	3,323,395	59·79	1918.....	21,383,979	20,693,704	96·772
1898.....	4,452,333	2,593,929	58·26	1919.....	16,020,657	17,802,474	111·122
1899.....	3,411,644	2,032,658	59·58	1920.....	13,330,357	13,450,330	100·900
1900.....	4,468,225	2,740,362	61·33	1921.....	13,543,198	8,485,355	62·654
1901.....	5,539,192	3,265,354	58·95	1922.....	18,626,439	12,576,758	67·521
1902.....	4,291,317	2,238,351	52·16	1923.....	18,601,744	12,067,509	64·873
1903.....	3,198,581	1,709,642	53·45	1924.....	19,736,323	13,180,113	66·781
1904.....	3,577,526	2,047,095	57·22	1925.....	20,228,988	13,971,150	69·065
1905.....	6,000,023	3,621,133	60·35	1926.....	22,371,924	13,894,531	62·107
1906.....	8,473,379	5,659,455	66·79				
1907.....	12,779,799	8,348,659	65·33	<b>Total.....</b>	<b>515,577,794</b>	<b>332,876,835</b>	

Table 170.—Production of Silver from Canadian Ores,\* by Provinces, 1887-1926

Year	Quebec		Ontario		British Columbia		Yukon Territory	
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value
		\$		\$		\$		\$
1887	146,898	143,666	190,495	186,304	17,690	17,301		
1888	149,388	140,425	203,054	195,580	79,780	74,993		
1889	148,517	139,012	181,609	169,986	53,192	49,787		
1890	171,545	179,436	158,715	166,066	70,427	73,666		
1891	185,584	183,357	225,633	222,926	3,305	3,266		
1892	191,910	168,113	41,581	36,425	77,160	67,592		
1893		126,439		8,689		195,000		
1894	101,318	63,830			746,379	470,219		
1895	81,753	53,369			1,496,522	976,930		
1896	70,000	46,942			3,135,343	2,102,561		
1897	80,475	48,116	5,000	2,990	5,472,971	3,272,289		
1898	74,932	43,655	85,000	49,521	4,292,401	2,500,753		
1899	40,231	23,970	202,000	120,352	2,939,413	1,751,302	230,000	137,034
1900	58,400	35,817	161,650	99,140	3,953,175	2,427,548	290,000	177,857
1901	41,459	24,440	151,400	89,250	5,151,333	3,036,711	195,000	114,953
1902	42,500	22,168	145,000	75,632	3,917,917	2,043,586	185,900	96,985
1903	28,600	15,287	17,777	9,502	2,996,204	1,601,471	156,000	83,362
1904	15,000	8,583	206,875	118,376	3,222,481	1,843,935	133,170	76,201
1905	19,620	11,841	2,451,355	1,479,442	3,439,417	2,075,757	89,630	54,093
1906	17,686	11,813	5,401,766	3,607,894	2,990,262	1,997,226	63,665	42,522
1907	16,000	10,452	9,982,363	6,521,178	2,745,448	1,793,519	35,988	23,510
1908	13,299	7,030	19,398,545	10,254,847	2,631,389	1,391,058	63,000	33,304
1909	13,233	6,815	24,822,099	12,784,126	2,649,141	1,364,387	45,000	23,176
1910	7,593	4,061	30,366,366	16,241,755	2,407,887	1,287,883	87,418	46,756
1911	18,435	9,827	30,540,754	16,279,443	1,887,147	1,005,924	112,708	60,078
1912	9,465	5,758	29,214,025	17,772,352	2,651,002	1,612,737	81,068	49,318
1913	34,573	20,672	28,411,261	16,987,377	3,312,343	1,980,483	87,626	52,392
1914	57,737	31,646	25,139,214	13,779,055	3,159,897	1,731,971	92,973	50,959
1915	63,450	31,524	22,748,609	11,302,419	3,565,852	1,771,658	248,049	123,241
1916	98,610	64,748	21,608,158	14,188,133	3,392,872	2,227,794	360,101	236,446
1917	136,194	110,885	19,301,835	15,714,975	2,655,994	2,162,430	119,605	97,379
1918	178,675	172,907	17,198,737	16,643,562	3,921,336	3,794,755	71,915	69,594
1919	140,926	156,903	12,117,878	13,465,628	3,713,537	4,126,556	27,556	30,621
1920	61,003	61,552	9,907,626	9,996,795	3,327,028	3,356,971	19,190	19,363
1921	38,084	23,861	9,761,607	6,116,037	3,350,357	2,099,133	393,092	246,288
1922			10,811,903	7,300,305	7,150,937	4,828,384	663,493	447,997
1923	33,006	21,412	10,540,943	6,838,226	6,113,327	3,965,899	1,914,438	1,241,953
1924	83,814	55,972	11,272,567	7,527,933	8,153,003	5,444,657	226,755	151,429
1925	214,943	148,451	10,529,131	7,271,944	8,579,452	5,925,403	904,893	624,964
1926	375,986	233,513	9,274,965	5,760,402	10,625,816	6,599,376	2,095,027	1,301,159
<b>Total</b>	<b>3,260,842</b>	<b>2,667,965</b>	<b>372,782,507</b>	<b>239,384,567</b>	<b>130,054,114</b>	<b>85,052,871</b>	<b>8,993,260</b>	<b>5,712,934</b>

\*Does not include small productions from Nova Scotia, New Brunswick, Alberta and Manitoba.

#### QUEBEC

During 1926 the production of silver in Quebec was derived for the greater part from the lead-zinc ores, and to a less extent, from the pyritic ores that were sent out of the country for treatment in foreign smelters. The total credited to the province was 375,986 ounces valued at \$233,513, an increase of 75 per cent in quantity and 57 per cent in value over the totals for the previous year.

#### ONTARIO

Silver production in Ontario in 1926 amounted to 9,274,965 fine ounces valued at \$5,760,402 as against 10,529,131 fine ounces valued at \$7,271,944 in 1925, marking a decrease of 12 per cent in quantity and nearly 21 per cent in value. The total for 1926 included (a) 2,926,733 ounces of bullion made in the Cobalt district; this amount represented 31.5 per cent of the total production for Ontario; (b) 4,890,586 ounces, or 52.8 per cent, recovered by the smelters of southern Ontario; and (c) 316,493 ounces, or 3.4 per cent contained in gold bullion and nuggets sold for exhibition purposes and in products from the nickel refineries; the remainder, 1,141,153 ounces, or 12.3 per cent, was recovered from Ontario ores, slags, and matte treated in the United States and Europe. The corresponding figures for 1925 were: (a) 6,079,142 fine ounces or 57.7 per cent; (b) 2,813,071 fine ounces or 26.7 per cent; (c) 383,138 fine ounces or 3.6 per cent; and (d) 1,253,780 fine ounces or 12.0 per cent.

The Nipissing Mining Company was the only producer of silver bullion in the Cobalt camp in 1926. The Cobalt Reduction Company which had operated a refinery for some years, discontinued this phase of its work in 1926 and made arrangements to ship concentrates to the Deloro Smelting and Refining Company, Limited. This explains the decrease in the amount of silver bullion made at the Cobalt mines in 1926 as against 1925, and also the increase in the amount of bullion made by the smelter treating the ores from this district. This change in practice was made to cheapen the costs of concentration and smelter treatment and thus to offset the low price of silver.

As indicated above, practically the whole of Ontario's silver production was derived from cobalt ores with small quantities derived from copper-nickel ores and from gold ores. Recovery during the year from these sources was as follows: silver contained in gold ores, 249,331 ounces as against 247,838 ounces in 1925; silver produced from the copper-nickel ores, 151,429 ounces as against 134,390 ounces in 1925.

Table 171.—Silver Shipments by Areas, Ontario, 1904-1926

From 1926 Report of Ontario Department of Mines.

Year	Silver shipments in Troy ounces						Average price, cents per ounce (New York)
	Cobalt area	Casey township	South Lorrain	Gowganda	Montreal River and Maple Mountain	Total	
1904.....	206,875					206,875	57.221
1905.....	2,451,356					2,451,356	60.352
1906.....	5,401,766					5,411,766	66.791
1907.....	10,023,311					1,023,311	65.237
1908.....	19,424,251	500	13,124			19,437,875	52.864
1909.....	25,658,683	26,185	124,955		18,002	25,897,825	51.502
1910.....	29,849,981	92,544	221,133	471,688	9,835	30,645,181	53.486
1911.....	29,989,893	114,789	933,912	468,687	510	31,597,791	53.340
1912.....	28,605,940	253,824	834,119	549,976		31,243,859	60.835
1913.....	28,105,505	825,108	248,992	502,370		29,681,975	57.791
1914.....	24,155,699	499,643	108,199	399,300		25,162,841	54.811
1915.....	24,280,366	223,939		242,229		24,746,534	49.684
1916.....	19,008,517	445,900	77,280	383,393		19,915,090	65.661
1917.....	18,327,258		10,000	1,064,635		19,411,893	81.417
1918.....	16,807,407	143,901	72,188	638,198		17,661,694	96.772
1919.....	10,314,689	171,278	4,586	723,764		11,214,317	111.122
1920.....	10,402,249		8,253	433,352	2,467*	11,846,321	100.900
1921.....	7,673,535	1,101	328,886	258,292	117	8,261,931	62.654
1922.....	9,239,147	1,028	1,284,307	170,651	15,994†	11,711,127	67.528
1923.....	7,259,858		2,955,646	160,761	1,581	11,377,846	64.873
1924.....	6,704,787		2,633,058	598,057		9,935,902	66.781
1925.....	6,252,115		3,099,964	1,355,156		11,707,235	69.065
1926.....	6,262,249		3,044,584	1,236,640		11,543,473	62.107
Total.....	343,495,437	2,799,749	16,073,186	9,657,149	48,596	374,981,018	

\* Includes 885 oz. from Silver Islet, Lake Superior.

† Silver Islet, exclusively.

The following table shows the percentage of production from the Cobalt camp, from Ontario smelters, and from ores exported to foreign smelters.

**Table 172.—Percentage of Ontario's Silver Production Credited to each Producing Group, 1916-1926**

Group	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
	%	%	%	%	%	%	%	%	%	%	%
Cobalt district.....	39.5	51.1	55.0	48.7	58.6	51.8	74.4	60.8	51.2	(a) 60.1	31.5
Ontario smelters.....	44.7	33.9	29.0	36.4	33.7	41.1	19.3	30.5	39.4	26.7	(b) 56.2
Total production in Ontario.....	84.2	85.0	84.0	85.1	92.3	92.9	93.7	91.3	90.6	86.8	87.7
Production in foreign smelters.....	15.8	15.0	16.0	14.9	7.7	7.1	6.3	8.7	9.4	13.2	12.3
<b>Total</b> .....	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Includes a small amount of silver from gold ores exported.

(b) Includes silver in gold bullion produced by gold mines, in nuggets sold for exhibition purposes and in products of the nickel refineries.

### MANITOBA

Silver production in Manitoba during 1926 amounted to only 18 ounces recovered from crude gold shipped to the Mint. Copper deposits were developed during the war, and from 1918 to 1920 shipments of copper ore containing silver were sent to Trail; in those three years, production from this source amounted to about 50,000 ounces. Owing to the drop in price of copper and to the high freight rates, practically no shipments of copper ores have been made in recent years, but indications at the present time are more favourable.

**Table 173.—Production of Silver in Manitoba, 1919-1926**

Year	Fine ounces	Value
		\$
1919.....	20,700	23,069
1920.....	15,510	15,649
1921.....	33	20
1922.....	20	14
1923.....	5	3
1924.....	140	93
1925.....	477	329
1926.....	18	11

### BRITISH COLUMBIA

In 1926, for the first time since 1905, British Columbia surpassed Ontario in the production of silver. Most of the British Columbia output of silver is now derived from the ores of the Sullivan mine near Kimberley, and from the Premier mine, at Premier, B.C. Other sources of silver in this province have been the silver-lead-zinc ores of East and West Kootenay, the gold-copper ores of Rossland, and ores from the boundary and the coast districts.

Silver production in the province during 1926 amounted to 10,625,816 fine ounces valued at \$6,599,376 as against 8,579,458 fine ounces valued at \$5,925,403 in 1925. Production in 1926 included (a) silver contained in blister copper, 1,235,398 ounces or 11.6 per cent of the provincial total; (b) silver in lead and gold bullion, 6,770,742 ounces, or 63.8 per cent; (c) silver in lead and zinc ores and concentrates exported, 46,948 ounces, or 0.4 per cent; and (d) silver in gold, silver and copper ores exported, 2,572,728 ounces, or 24.2 per cent. Corresponding figures for 1925 were: (a) 801,809 ounces or 9.3 per cent; (b) 5,314,072 ounces or 62 per cent; (c) 309,065 ounces or 3.6 per cent; and (d) 2,154,512 ounces or 25.1 per cent.

Table 174.—Production of Silver in British Columbia by Districts, 1925 and 1926

(From *Annual Report of the Minister of Mines for British Columbia.*)

District and division	1925		1926	
	Ounces	Value	Ounces	Value
		\$		\$
Northwestern District (No. 1)—				
Atlin.....	2,786	1,924	26,583	16,510
Stikine.....				
Liard.....				
Nass River.....	390,954	270,012	409,470	254,310
Portland Canal.....	2,392,046	1,652,066	3,092,503	1,920,661
Skeena.....	21,273	14,692	6,927	4,302
Queen Charlotte.....				
Bella Coola.....				
Northeastern District (No. 2)—				
Cariboo.....				
Quesnel.....				
Omineca.....	85,888	59,319	239,053	148,469
Peace River.....				
Central District (No. 3)				
Nicola.....	59	41	1,060	658
Vernon.....			51	32
Yale.....			16	10
Ashcroft.....				
Kamloops.....			133,815	83,108
Lillooet.....			807	501
Clinton.....				
Southern District (No. 4)—				
Grand Forks.....	709	490	16	10
Greenwood.....	480,822	332,080	408,562	253,745
Osoyoos.....	2,710	1,872	11,353	7,051
Similkameen.....	20,472	14,139	141,236	87,717
Eastern District (No. 5)				
Fort Steele.....	3,108,682	2,145,630	4,942,364	3,069,554
Windermere.....	39,262	27,116	20,356	12,643
Golden.....				
Ainsworth.....	79,057	54,601	139,832	86,845
Slocan.....	856,375	591,455	938,880	583,110
Slocan City.....	9,458	6,532	1,136	705
Nelson.....	1,652	1,141	52,152	32,390
Arrow Lake.....				
Trail Creek.....	32,353	22,345	24,705	15,344
Revelstoke.....			143	89
Trout Lake.....				
Lardeau.....	471	325	9,314	5,785
Western District (No. 6)—				
Nanaimo.....	71	49		
Alberni.....				
Clayoquot.....				
Quatsino.....				
Victoria.....				
New Westminster.....			109	68
Vancouver.....	131,744	90,989	148,113	91,989
<b>Total.....</b>	<b>7,654,844</b>	<b>5,286,818</b>	<b>10,748,556</b>	<b>6,675,606</b>

## YUKON

Silver production from the Yukon Territory in 1926 was the greatest of any year on record and amounted to 2,095,027 fine ounces valued at \$1,301,159 as against a production of 904,893 fine ounces valued at \$624,964 in 1925. Yearly statistics in the Yukon Territory are not comparable owing to the conditions prevailing in connection with the shipping of ores and concentrates to outside smelters. Ores mined late in one season are hauled down by tractor and piled on the river banks, there to await the spring break-up before they can be shipped to the customs smelters. A concentrator was built in 1925 by the Treadwell-Yukon Company, which is of much assistance to small operators in the district who are now able to get the returns from their operations earlier, and are also able to market a lower grade of ore than formerly, when they were compelled to ship to smelters a long distance away. Then, they were only able to market comparatively high-grade ore, because of the transportation charges.

The total quantity of silver obtained from placer gold is decreasing. In 1922 only 12,333 fine ounces were recovered, as against 14,831 fine ounces in 1921. In 1923 the yield amounted to 13,476 fine ounces, but in 1924 only 7,853 fine ounces, in 1925 the total recovery amounted to 10,759 fine ounces and in 1926 it decreased to 5,702 fine ounces.

The following table gives the percentages of recovery from the several sources during the years 1916 to 1926.

Table 175.—Percentage of the Silver Output in the Yukon Won from Lode and Placer Mining, 1916-1926

Year	From lode mining	From placer mining
	%	%
1916.....	87.0	13.0
1917.....	66.8	33.2
1918.....	68.2	31.8
1919.....	26.0	74.0
1920.....	14.6	85.4
1921.....	96.2	3.8
1922.....	98.2	1.8
1923.....	99.3	0.7
1924.....	96.5	3.5
1925.....	98.9	1.1
1926.....	99.7	0.3

Table 176.—Imports into Canada and Exports of Silver, 1924-1926

	1924		1925		1926	
	Cz.	\$	Oz.	\$	Oz.	\$
<b>IMPORTS—</b>						
Silver bullion in bars.....		665,280		1,025,109		1,011,015
Sterling silver.....		209,430		210,384		440,079
Silver coin.....		1,275		61		55
<b>Total.....</b>		<b>875,985</b>		<b>1,235,554</b>		<b>1,451,149</b>
<b>EXPORTS—</b>						
Silver contained in ore, concentrates, etc.....	4,821,913	3,013,500	4,754,915	3,021,418	5,890,280	3,546,952
Silver bullion.....	13,656,167	9,069,454	14,316,797	9,861,219	15,241,853	9,559,825
Silver coin.....		50		2,089		
<b>Total.....</b>	<b>18,478,080</b>	<b>12,083,004</b>	<b>19,071,712</b>	<b>12,884,726</b>	<b>21,132,133</b>	<b>13,106,777</b>

**Prices.**—In 1926 silver provided students of the mineral industry with much food for thought. Disturbances in the Orient, the world's principal market for silver, had an unsettling effect on prices. In China, internal trading was disturbed by the influence of the insurgent element in the population; the necessity for silver for the settlement of foreign trade balances declined with the reduction in trade; the lack of demand in China was reflected in the Indian bazaars; and then came the announcement of the findings of the Royal Commission appointed to inquire into the Indian currency situation. This report was improperly understood at first to mean the abolition of silver as currency in India. As a result of these disturbing factors, the price of silver broke in September and declined still further in the following months to reach 51½ cents in New York in December, a lower level than had been recorded at any time in more than ten years. The average price of silver for the year was 62.107 cents per fine ounce.

Table 177.—Monthly Average Prices of Silver, 1924-1926

From the *Engineering and Mining Journal*

Month	New York (Cents per fine ounce)			London (Pence per standard ounce)		
	1924	1925	1926	1924	1925	1926
January.....	63.447	68.447	67.795	33.549	32.197	31.322
February.....	64.359	68.472	66.773	33.565	32.245	30.797
March.....	63.957	67.808	65.880	33.483	31.935	30.299
April.....	64.139	66.899	64.409	33.065	31.372	29.682
May.....	65.524	67.580	65.075	33.870	31.276	30.125
June.....	66.690	69.106	65.481	34.758	31.863	30.248
July.....	67.159	69.442	64.793	34.509	31.954	29.861
August.....	68.519	70.240	62.380	34.213	32.268	28.773
September.....	69.350	71.570	60.580	34.832	32.983	27.904
October.....	70.827	71.106	54.505	35.387	32.972	25.291
November.....	69.299	69.223	54.141	33.775	32.155	25.192
December.....	68.096	68.889	53.466	32.620	31.835	24.733
<b>Average.....</b>	<b>66.781</b>	<b>69.065</b>	<b>62.107</b>	<b>33.969</b>	<b>32.088</b>	<b>28.656</b>

**World Production.**—In order of importance, the chief silver-producing countries of the world are: Mexico, United States, Canada and Peru. This places Canada third in the countries of the world and first in the British Empire.

The North American continent produced 181·6 million ounces in 1926 out of a total world's production of 250·6 million ounces. South America was credited with 30·7 million ounces, Europe, 11·3 million ounces, of which 5 millions were produced in Germany (including Silesia), and 3·5 million ounces, in Spain and Portugal. Oceania was credited with 11 million ounces, and the continent of Asia with 11·8 million ounces, whilst Africa, the greatest gold-producing continent of the world, produced only 1·1 million ounces of silver.

Table 178.—World Production of Silver 1913 and 1922-1926

(Fine ounces)

From *Year Book of the American Bureau of Metal Statistics*, 1922 and 1926

	1913	1922	1923	1924	1925	1926
<b>NORTH AMERICA—</b>						
United States.....	66,801,500	56,240,048	66,163,338	64,221,655	61,377,977	60,918,000
Canada.....	31,524,708	18,626,439	18,601,744	19,736,323	20,228,988	22,435,531
Mexico.....	55,486,431	81,076,899	90,810,855	91,437,944	92,912,000	98,291,000
<b>Total North America.....</b>	<b>153,812,639</b>	<b>155,943,386</b>	<b>175,575,937</b>	<b>175,395,922</b>	<b>174,518,965</b>	<b>181,644,531</b>
<b>Total—Central America and West Indies..</b>	<b>2,135,641</b>	<b>2,500,000</b>	<b>3,000,000</b>	<b>2,700,000</b>	<b>3,000,000</b>	<b>3,000,000</b>
<b>SOUTH AMERICA—</b>						
Argentina.....	35,271	25,000		20,000	18,000	20,000*
Bolivia.....	3,932,594	5,373,559	5,212,843	4,857,608	5,174,000	5,839,000
Brazil.....	28,364	25,720	28,613	28,613	1,833	2,000*
Chile.....	Included with Bolivia	2,709,141	3,337,474	3,033,225	3,553,862	3,700,000*
Colombia.....	587,683	3,150	3,150	2,900	2,900	3,000*
Ecuador.....	22,642	75,000	75,000	70,000	70,000	70,000*
Peru.....	9,617,094	13,169,765	18,654,362	18,717,087	19,917,439	21,100,000
Other countries.....	51,111	16,850	11,200	11,400	11,715	12,000*
<b>Total South America.....</b>	<b>14,274,759</b>	<b>21,398,185</b>	<b>27,322,642</b>	<b>26,740,833</b>	<b>28,749,749</b>	<b>30,746,000</b>
<b>EUROPE—</b>						
Austria-Hungary.....	2,104,107	8,583	14,178	28,678	23,920	25,000*
France.....	1,005,266	347,220	213,025	147,858	201,355	200,000*
Czecho Slovakia.....		875,187	702,317	732,538	707,300	700,000*
Great Britain.....	128,543	29,885	34,625	31,153	32,439	30,000*
Germany (including Silesia).....	6,182,445	3,615,525	3,883,945	4,787,521	5,013,000	5,090,400
Greece.....	803,750	184,123	195,000	160,750	254,274	250,000*
Italy.....	423,888	215,405	385,806	496,975	320,761	519,371*
Norway.....	300,602	205,760	298,995	424,380	385,800	400,000*
Rumania.....		62,821	64,300	72,209	75,000	75,000*
Russia.....		150,000	192,900	250,000	250,000	300,000*
Serbia.....	28,758					
Jugo-slavia.....		26,813	24,562	31,250	26,106	30,000*
Spain and Portugal.....	4,237,239	2,778,210	2,842,060	2,879,965	3,303,863	3,500,000*
Sweden.....	33,339	9,645	15,046			
Turkey.....	1,509,133	8,037	8,037	219,906	219,900	220,000*
<b>Total Europe.....</b>	<b>16,757,070</b>	<b>8,517,214</b>	<b>8,874,796</b>	<b>10,263,183</b>	<b>10,813,718</b>	<b>11,339,771*</b>
<b>OCEANIA—</b>						
New South Wales.....	14,504,889	9,912,927	12,067,954	9,256,671	9,220,160	
Queensland.....	604,979	273,036	469,302	276,651	385,489	
Victoria.....	16,195	6,978	6,304	4,216	2,082	
New Zealand.....	975,616	376,000	527,491	500,023	420,425	
Tasmania.....	765,187	794,585	638,602	642,158	730,194	
Other states.....	190,680	121,208	109,048	90,163	76,458	
<b>Total Oceania.....</b>	<b>17,057,546</b>	<b>11,484,734</b>	<b>13,818,701</b>	<b>10,769,882</b>	<b>10,834,808</b>	<b>11,000,000</b>
<b>ASIA—</b>						
India.....	125,209	4,244,304	4,863,066	5,309,203	4,854,923	5,127,000
China.....		100,000	100,000	110,000	100,000	100,000*
Chosen (Korea).....	15,048	10,835	39,281	54,662	50,000	50,000*
Dutch East Indies.....	465,980	1,109,657	1,408,973	2,083,256	2,385,016	2,000,000*
Japan.....	4,700,390	3,886,301	3,597,264	3,542,255	4,022,000	4,500,000
Other countries.....	51,763	23,890	23,437	11,008	13,162	15,000*
<b>Total Asia.....</b>	<b>5,358,390</b>	<b>9,374,957</b>	<b>10,032,021</b>	<b>11,110,384</b>	<b>11,425,101</b>	<b>11,792,000</b>
<b>AFRICA—</b>						
Algeria.....						
Belgian Congo.....	1,454	6,559	8,745			
Rhodesia.....	121,537	179,399	161,492	401,277	157,971	153,990
Transvaal, Cape Colony and Natal.....	952,928	1,115,676	1,373,930	1,396,943	1,161,470	981,243
Other countries.....		13,362	1,000	733	2,000	1,000*
<b>Total Africa.....</b>	<b>1,075,919</b>	<b>1,314,996</b>	<b>1,545,167</b>	<b>1,798,953</b>	<b>1,321,441</b>	<b>1,136,233</b>
<b>Grand Total.....</b>	<b>210,471,964</b>	<b>210,533,502</b>	<b>240,169,264</b>	<b>238,779,157</b>	<b>240,663,782</b>	<b>250,658,535</b>

(a) The basis of this table is the information published by the Director of the Mint. However, revisions and additions have been made so that the totals do not agree with the Mint figures. For 1926 the figures are based on actual reports or reliable estimates, except where the asterisk is used indicating that the figure is conjectural.

## LEAD

## CANADA

**Production.**—Production of lead from Canadian ores in 1926 amounted to 283,801,265 pounds which at the average London price of 6.751 cents per pound was worth \$19,240,661 as against a production of 253,590,578 pounds valued at \$23,127,460, when the average price on the Montreal market, 9.12 cents per pound was used.

A change in the method of computing lead production has been adopted in respect to 1926 figures, and will be used in future reports. Formerly it was the practice to evaluate the smelter output of lead from Canadian ores during the year at the average price prevailing in the Montreal market for pig lead. But as by far the greater part of the output is sold in Europe or the Orient on the basis of London quotations, or in the United States after payment of an import duty, it was decided that a better estimate of the true sales value would be obtained by the use of London quotations in these cases; lead from Ontario mines is mostly sold in Canada and sales—both for quantities and values—have been used in making up the figures on lead for this one province. In all other cases, i.e., British Columbia, Yukon and Quebec, the average of London quotations converted at par, was used in determining the value of the output.

For comparative purposes the computation has been made in the following tables, according to both methods, for 1925 and 1926.

Table 179.—Production of Lead in Canada, 1925 and 1926

Province	1925		1926	
	Pounds	Value	Pounds	Value
		\$		\$
(a) Calculated at average Montreal price for year (1)				
Quebec.....	2,051,100	187,060	3,729,636	304,114
Ontario.....	7,209,534	657,510	7,307,830	595,880
British Columbia.....	242,454,502	22,111,850	266,812,461	21,755,888
Yukon.....	1,875,442	171,040	5,860,373	477,855
<b>Total.....</b>	<b>253,590,578</b>	<b>23,127,460</b>	<b>283,710,309</b>	<b>23,133,737</b>
(b) Calculated at average London price for the year except for Ontario (2)				
Quebec.....	2,051,100	162,324	(see note <sup>2</sup> )	251,788
Ontario.....	7,268,193	604,798	7,398,795	580,730
British Columbia.....	242,454,502	19,187,849	266,812,461	18,012,509
Yukon.....	1,875,442	148,422	5,860,373	395,634
<b>Total.....</b>	<b>253,649,237</b>	<b>20,103,393</b>	<b>283,801,265</b>	<b>19,240,661</b>

(1) 1925—9.12 cents per pounds.

(1) 1926—8.154 cents per pound.

(2) 1925—7.914 cents per pound

(2) 1926—6.751 cents per pound

Production in 1926 included 266,812,461 pounds of lead from British Columbia, the greater part of which was from the Sullivan mine, situated at Kimberley, on the Crownsnest line of the Canadian Pacific Railway; 7,398,795 pounds from Ontario which included a small amount contained in silver-lead-bismuth bullion exported from the Deloro smelter; but the greater part was in the form of pig lead produced at the Kingdon mine on Chats Island in the Ottawa river, about 1½ miles north of Galetta village and about 40 miles from Ottawa; 3,729,636 pounds contained in concentrates exported to Belgium from the Tetreault mine at Notre Dame des Anges, Portneuf county, Quebec; and 5,860,373 pounds contained in ores and concentrates exported to United States smelters from the mines of the Mayo district, Yukon Territory; the largest mine in this latter group was the Treadwell-Yukon.

Previous to 1904, lead ores mined in Canada were either exported as ore or smelted in Canadian furnaces to a base bullion which was then exported for refining. A lead refinery employing the Betts electrolytic process has been in operation at Tadanac (near Trail), B.C., since 1904, treating the product from lead blast furnaces.

Refined lead produced in Canada which includes the product of the lead refinery at Trail and the pig lead made at Galetta amounted to 257,273,585 pounds in 1926 as against 213,217,605 pounds in 1925.

Table 180.—Production\* of Lead from Canadian Ores, 1887-1926

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per Pound
		\$				\$	
1887	204,800	9,216	5-400	1907	47,738,703	2,542,086	5-325
1888	674,500	29,812	4-420	1908	43,195,733	1,814,221	4-200
1889	165,100	6,488	3-930	1909	45,857,424	1,692,139	3-690
1890	105,000	4,704	4-480	1910	32,987,508	1,216,249	3-687
1891	88,665	3,857	4-350	1911	23,784,969	827,717	3-480
1892	808,420	33,064	4-090	1912	35,763,476	1,597,554	4-467
1893	2,135,023	79,636	3-730	1913	37,662,703	1,754,705	4-659
1894	5,703,222	187,636	3-290	1914	36,337,765	1,627,568	4-479
1895	16,461,794	531,716	3-230	1915	46,316,450	2,593,721	5-600
1896	24,199,977	721,159	2-980	1916	41,497,615	3,532,692	8-513
1897	39,018,219	1,396,853	3-580	1917	32,576,281	3,628,020	11-137
1898	31,915,319	1,206,399	3-780	1918	51,398,002	4,754,315	9-250
1899	21,862,436	977,250	4-470	1919	43,827,699	3,053,037	6-966
1900	63,169,821	2,760,521	4-370	1920	35,953,717	3,214,262	8-940
1901	51,900,958	2,249,387	4-334	1921	111,234,466	7,985,522	5-742
1902	22,956,381	934,095	4-069	1922	93,307,171	5,817,702	6-235
1903	18,139,283	768,562	4-237	1923	111,234,466	7,985,522	7-179
1904	37,531,244	1,617,221	4-309	1924	175,485,499	14,221,345	8-104
1905	56,864,915	2,676,632	4-707	1925	253,590,578	23,127,460	9-120
1906	54,608,217	3,089,187	5-657	1926	283,801,265	19,240,661	6-751
				<b>Total</b>	<b>1,987,509,910</b>	<b>127,353,113</b>	

\*Previous to 1913 the figures reported show the metal content of the shipments and are somewhat in excess of the actual amount recovered. Since 1912 the data given represent the quantity of lead produced in Canada from domestic ores, together with the estimated lead recovery from lead ores and concentrates exported. From 1887 to 1908, average prices at New York; 1909 and 1910, average prices at Toronto; from 1911 to 1925, average prices in Montreal were used in making up the values shown. In 1926 the average yearly price at London was used.

Table 181.—Production of Lead from Canadian Ores, by Provinces, 1887-1926

Year	Quebec		Ontario		British Columbia		Yukon	
	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$	Pounds	Value \$
1887					204,800	9,216		
1888					674,500	29,812		
1889					165,100	6,488		
1890	105,000	4,704						
1891	88,665	3,857						
1892					808,420	33,064		
1893	3,931	146			2,131,092	79,490		
1894					5,703,222	187,636		
1895					16,461,794	531,716		
1896					24,199,977	721,159		
1897	177,084	6,340			38,841,135	1,390,513		
1898	221,760	8,382			31,693,559	1,198,017		
1899					21,862,436	977,250		
1900	11,200	490			63,158,621	2,760,031		
1901	318,052	13,784			51,582,906	2,235,603		
1902	420,000	17,090			22,536,381	917,005		
1903			50,000	2,119	18,089,283	766,443		
1904			885,000	38,135	36,646,244	1,579,086		
1905			284,212	13,378	56,580,703	2,663,254		
1906			2,200,000	124,454	52,408,217	2,964,733		
1907					47,738,703	2,542,086		
1908					43,195,733	1,814,221		
1909					45,857,424	1,692,139		
1910					32,987,508	1,216,249		
1911					23,784,969	827,717		
1912					35,763,476	1,597,554		
1913			33,000	1,537	37,626,899	1,753,037	2,804	131
1914					36,289,845	1,625,422	47,920	2,146
1915	40,401	2,262	88,985	4,983	45,377,064	2,541,116	810,000	45,360
1916	698,760	59,485	685,932	58,393	39,157,701	3,333,496	955,222	81,318
1917	1,378,001	153,468	1,586,711	176,712	29,483,725	3,283,602	127,844	14,238
1918	2,110,059	195,180	1,684,366	155,804	47,594,328	4,402,475	9,249	856
1919	2,280,000	158,825	1,487,586	103,625	40,060,113	2,790,587		
1920	905,472	80,949	2,255,520	201,643	32,792,725	2,931,670		
1921	955,881	34,215	3,312,493	190,205	60,298,603	3,462,346	2,472,615	141,978
1922			2,890,397	180,216	87,093,266	5,430,265	3,323,508	207,221
1923	520,041	37,324	4,401,494	315,983	99,541,818	7,146,107	6,771,113	486,098
1924	1,058,983	85,820	5,055,368	409,687	168,467,628	13,652,617	903,520	73,221
1925	2,051,100	187,060	7,209,534	657,510	242,454,502	22,111,850	1,875,442	171,040
1926	3,729,636	251,788	7,398,795	580,730	266,812,461	18,012,509	5,860,373	395,634
<b>Total</b>	<b>16,714,026</b>	<b>1,301,179</b>	<b>41,509,393</b>	<b>3,215,112</b>	<b>1,906,126,881</b>	<b>121,217,582</b>	<b>23,159,610</b>	<b>1,619,241</b>

Table 182.—Refined Lead Produced in Canada,\* 1904-1926

Year	Pounds of refined lead produced	Year	Pounds of refined lead produced	Year	Pounds of refined lead produced
1904.....	7,519,440	1912.....	35,893,190	1920.....	28,720,030
1905.....	15,804,509	1913.....	37,923,043	1921.....	60,949,793
1906.....	20,471,314	1914.....	36,443,706	1922.....	81,412,716
1907.....	26,607,461	1915.....	43,518,618	1923.....	101,096,312
1908.....	36,549,274	1916.....	33,087,474	1924.....	130,471,208
1909.....	41,883,614	1917.....	32,115,114	1925.....	213,217,605
1910.....	32,987,508	1918.....	31,571,112	1926.....	257,273,585
1911.....	23,525,050	1919.....	34,330,920	<b>Total.....</b>	<b>1,363,372,596</b>

\* Includes the electrolytic lead produced from Canadian and foreign ores at Trail, B.C., and also the pig lead from Galetta, Ont.

### QUEBEC

Lead production at 3,729,636 pounds in the province of Quebec was greater in 1926 than in any other year on record. In 1919 owing to the demands made by the war, 2·28 million pounds were produced. During 1922 there was no production from Quebec mines but in the next year shipping was resumed and through a system of selective flotation worked out by the Mines Branch, Ottawa, good lead and zinc concentrates were made, and production increased year by year. Considerable interest has been displayed in the Gaspé peninsula as a possible producer of lead and zinc ore. The Federal Zinc and Lead Company have done a considerable amount of development work in this district. Other companies interested in Gaspé are the Pioneer Mining Corporation, Limited; the Huronian Belt Limited; the British Metals; and Messrs. Lyl and Beidelman. Lead has also been found associated with zinc in the copper-gold ores of the Rouyn district of western Quebec.

### ONTARIO

Many years ago, two lead mines were operated in Frontenac county but it was not until 1913 that any statistical records were kept. During that year the Kingdon mine, Carleton county, on which some work was done as far back as 1884 and 1885, was re-opened and some 33,000 pounds of lead were recovered. The vein has been followed to a depth of over 1,100 feet and in the underground workings for a horizontal distance of over 2,500 feet. A very efficient mill is in operation and in 1926 the production of lead amounted to 7,346,179 pounds which constituted a record for this property. At the lower levels zinc also occurs. A zinc concentrate is made and stored until a sufficient supply is on hand to make an export shipment.

Small quantities of lead are recovered from the silver-lead-bismuth bullion exported by the smelter operating on ores of the Cobalt district. In 1926 the recovery amounted to 21,666 pounds. In the sum of the production as reported for 1926, there have been included, data regarding a shipment made some years ago by Geo. Heck, of Prescott, Ontario, which have never been included in the Ontario output records. The total output for 1926 amounted to 7,398,795 pounds for the province.

### BRITISH COLUMBIA

British Columbia is by far the largest lead-producing province in the Dominion and in the Sullivan mine has the largest lead and zinc mine in the world. There are other silver-lead-zinc mines as well which are situated in the Fort Steel and Slocan-Ainsworth districts, and numerous other fields supply ore. The properties in the southern section of the province practically all ship to the smelter at Trail while the newer properties in the northern part of the province ship to foreign smelters.

During 1926 production of lead in British Columbia amounted to 266,812,461 pounds, the largest ever recorded. This figure includes the lead in base bullion made at Trail, and the recoverable lead in ores exported. Production in 1925 amounted to 242,454,502 pounds.

## YUKON

Production of lead from the Mayo district of the Yukon amounted to 5,860,373 pounds in 1926 as against an output in 1925 of 1,875,442 pounds. The principal producer in this district is the Treadwell Yukon though in 1926 two other companies made appreciable shipments of high-grade ore to foreign smelters for treatment. The Treadwell Yukon Company Limited, operate a mill and buy ore from small operators in the district.

**Imports and Exports.**—Imports into Canada in 1926 of old lead and scrap, pig and block lead, lead bars and sheets, litharge, pipe lead, shots and bullets, dry white lead, dry red lead and orange mineral, and other manufactures were greater than in 1925, while decreases were noted in acetate and nitrate of lead, and in white lead ground in oil. The net increase in the value of these imports over 1925 was \$140,892. Exports of lead in ore showed a considerable decrease while exports of pig lead amounted to 202,510,300 pounds, an increase of 42,379,500 pounds over the corresponding export figures for the previous year. The chief market for Canada's pig lead is in Europe and the Orient.

Table 183.—Imports into Canada and Exports of Lead, 1924-1926

	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
	lb.	\$	lb.	\$	lb.	\$
<b>IMPORTS—</b>						
Old and scrap, pig and block.....	693,244	50,847	505,555	50,606	766,939	67,671
Bars and sheets.....	115,836	12,682	104,814	10,554	116,846	11,887
Litharge.....	956,700	89,731	1,515,300	159,576	2,229,600	223,839
Acetate and nitrate of lead.....	207,364	19,115	222,535	20,516	140,046	13,492
Other manufactures.....		234,372		237,717		263,398
Pipe lead.....	48,961	4,183	42,592	4,099	116,344	11,011
Shots and bullets.....	10,529	1,324	6,040	923	12,316	1,543
Tea lead.....	203,324	22,080	131,402	16,260	83,531	10,362
Lead pigments—						
Dry white lead.....	193,843	17,778	47,549	4,749	60,606	5,539
White lead, ground in oil.....	205,824	19,050	127,016	14,795	73,468	7,539
Dry red lead and orange mineral....	704,282	64,719	628,648	68,509	1,158,873	112,915
<b>Total.....</b>		<b>535,881</b>		<b>588,304</b>		<b>729,196</b>
<b>EXPORTS—</b>						
Lead in ore.....	13,152,400	784,750	37,504,500	2,341,679	13,644,900	796,412
Pig lead.....	108,709,600	6,866,220	160,130,800	11,809,305	202,510,300	12,983,907
<b>Total.....</b>	<b>121,862,000</b>	<b>7,650,970</b>	<b>197,635,300</b>	<b>14,150,984</b>	<b>216,155,200</b>	<b>13,780,319</b>

**Prices.**—Lead prices during 1926 reached their highest point in January when the average price in New York was 9.255 cents per pound and the average price in London was £34.778 sterling per long ton. Prices receded in May to 7.751 cents in New York and in London to £28.253 sterling, rose again in August to 8.908 cents in New York and £32.756 in London, only to recede in December to 7.855 cents in New York and £28.932 in London.

The average price for the year was 8.417 cents per pound in New York, 8.15 cents per pound in Montreal and £31.075 per long ton in London, this latter price being equal to 6.751 cents per pound in Canadian funds computed at par (£=\$4.8666).

**Table 184.—Monthly Average Prices of Lead in Montreal, New York and London, 1924-1926**

	(a) Montreal cents per pound			(b) New York cents per pound			(b) London—in £ sterling per ton of 2,240 pounds		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
January.....	7.84	10.04	9.07	7.972	10.169	9.255	31.528	41.443	34.778
February.....	8.18	9.56	8.92	8.554	9.428	9.154	34.589	37.944	33.903
March.....	8.79	9.29	8.54	9.013	8.914	8.386	37.161	36.804	31.625
April.....	7.84	8.29	7.79	8.263	8.005	7.971	32.819	32.791	28.775
May.....	7.04	8.14	7.53	7.269	7.985	7.751	29.426	32.283	28.253
June.....	7.32	8.46	7.81	7.020	8.321	8.033	32.138	33.479	29.986
July.....	7.49	8.74	8.07	7.117	8.151	8.499	32.916	34.698	31.716
August.....	7.64	9.40	8.30	7.827	9.192	8.908	32.728	38.188	32.756
September.....	7.74	9.53	8.23	8.000	9.508	8.786	33.023	38.884	32.085
October.....	8.23	9.55	8.00	8.235	9.513	8.402	35.715	39.017	30.821
November.....	9.20	9.40	7.82	8.689	9.739	8.005	39.425	36.872	29.270
December.....	9.86	9.02	7.77	9.207	9.310	7.855	41.583	34.739	28.932
<b>Average.....</b>	<b>8.10</b>	<b>9.12</b>	<b>8.15</b>	<b>8.097</b>	<b>9.020</b>	<b>8.417</b>	<b>34.421</b>	<b>36.429</b>	<b>31.075</b>

(a) Prices furnished by Consolidated Mining &amp; Smelting Co. of Canada, Trail, B.C.

(b) Quoted from the *Engineering and Mining Journal*.**Table 185.—World Production of Lead, 1913 and 1922-1926**(From the *Year Book of the American Bureau of Metal Statistics*, 1926)

(Short tons)

Country	1913	1922	1923	1924	1925	1926
<b>NORTH AMERICA—</b>						
United States.....	435,665	470,000	530,000	590,000	662,500	698,000
Canada.....	18,822	45,842	53,899	86,533	126,994	141,386
Mexico.....	68,324	133,180	184,242	177,697	205,159	220,879
<b>Total North America.....</b>	<b>522,811</b>	<b>649,022</b>	<b>768,141</b>	<b>854,280</b>	<b>994,653</b>	<b>1,058,265</b>
<b>SOUTH AMERICA—</b>						
Argentina.....		3,986	4,000	5,000	8,488	9,370
Other South America.....	2,729	2,561	1,600	7,900	4,700	10,100
<b>Total South America.....</b>	<b>2,729</b>	<b>6,547</b>	<b>5,600</b>	<b>12,900</b>	<b>13,188</b>	<b>19,470</b>
<b>EUROPE—</b>						
Austria.....	26,558	4,106	4,690	5,494	5,961	7,141
Belgium.....	59,056	48,032	56,328	64,236	72,278	68,080
France.....	31,756	15,370	19,194	20,811	22,641	22,046
Germany (including Upper Silesia).....	207,176	81,090	53,034	73,198	101,059	108,232
Greece.....	20,177	4,853	4,667	5,628	4,957	4,960
Italy.....	23,885	11,960	18,885	24,318	26,979	25,534
Czecho-Slovakia and Jugo-Slavia.....		11,821	12,909	15,158	14,330	13,276
Poland (Upper Silesia excluded).....		110				
Russia.....	1,678			709	1,067	1,102
Spain.....	219,110	131,394	140,559	147,708	152,338	162,470
Sweden.....	1,361	418	338	740	901	772
United Kingdom.....	20,304	5,551	7,512	5,938	5,303	4,777
<b>Total Europe.....</b>	<b>614,037</b>	<b>314,705</b>	<b>318,116</b>	<b>363,988</b>	<b>407,814</b>	<b>418,390</b>
<b>ASIA—</b>						
Turkey.....	15,318	5,952	1,543	5,626	5,276	5,512
India (Burma).....	6,535	43,919	51,239	57,969	52,945	60,849
Japan.....	4,162	3,570	2,976	3,242	3,307	4,409
<b>Total Asia.....</b>	<b>26,015</b>	<b>53,441</b>	<b>55,758</b>	<b>66,837</b>	<b>61,528</b>	<b>70,770</b>
<b>Australia.....</b>	<b>126,207</b>	<b>118,064</b>	<b>137,364</b>	<b>140,645</b>	<b>165,634</b>	<b>167,423</b>
<b>AFRICA—</b>						
Rhodesia.....		22,962	12,343	7,003	3,674	4,282
Tunis.....		14,457	15,754	17,345	15,070	19,958
<b>Total Africa.....</b>		<b>37,419</b>	<b>28,097</b>	<b>24,348</b>	<b>18,744</b>	<b>24,240</b>
<b>Grand Total.....</b>	<b>1,291,799</b>	<b>1,179,198</b>	<b>1,313,076</b>	<b>1,462,998</b>	<b>1,661,561</b>	<b>1,758,558</b>

\*Dominion Bureau of Statistics reports the Canadian production of lead as follows: 1913—18,831 tons: 1922—46,653 tons: 1923—55,617 tons: 1924—87,743 tons: 1925—126,795 tons: 1,926—141,900 tons.

## ZINC

**Production.**—Production of zinc from Canadian ores in 1926 established a new high record for this metal with a total of 149,938,105 pounds (74,969 tons) which valued at the average London price for the year of 7.41 cents per pound, was worth \$11,110,413. The 1925 output amounted to 109,268,511 pounds (54,634 tons) which valued at the average St. Louis price of 7.622 cents per pound was computed to be worth \$8,328,446.

Refined zinc is produced at Trail, B.C., from the silver-lead-zinc ores of the West Kootenay district and from the Sullivan mine at Kimberley, B.C. Zinc concentrates are exported to Belgium from the Tetreault silver-lead-zinc property in Quebec. No other provinces in Canada produced zinc in 1926 but development work on a zinc property was carried on in the Sudbury district near Chelmsford, Ontario, by the Treadwell Mining Company.

Figures for the Canadian total production of zinc are made up by adding the production of refined zinc at Trail to the amount of zinc estimated as recoverable from ores exported; the value of production is calculated at the monthly average price for zinc on the London market for the year, exchange conversion being made at par. In previous years the average price on the St. Louis market was used, but as the bulk of Canada's zinc output is exported and sold on the basis of London quotations, it was thought that a more accurate aggregate value would be obtained by using prices quoted in London, and in 1926 this change in practice was made. It may be noted that the present procedure is in conformity with the practice of the British Columbia Department of Mines.

In order that comparative figures may be had, the table below shows the production data by provinces, both on the basis of the St. Louis prices, and also as determined from London quotations.

Table 186.—Production of Zinc in Canada, 1925 and 1926

	1925		1926	
	Pounds	Value	Pounds	Value
(a) Calculated at the average St. Louis price for the Year (1)		\$		\$
Quebec.....	9,936,000	757,322	12,904,176	946,779
Ontario.....	179,545	13,685		
British Columbia.....	99,152,966	7,557,439	137,033,929	10,054,179
<b>Total.....</b>	<b>109,268,511</b>	<b>8,328,446</b>	<b>149,938,105</b>	<b>11,000,958</b>
(b) Calculated at the average London price for the Year (2)				
Quebec.....	9,936,000	790,508	12,904,176	956,199
Ontario.....	179,545	14,285		
British Columbia.....	99,152,966	7,888,610	137,033,929	10,154,214
<b>Total.....</b>	<b>109,268,511</b>	<b>8,693,403</b>	<b>149,938,105</b>	<b>11,110,413</b>

(1) 1925—7.622 cts. per pound: 1926—7.337 cts. per pound.

(2) 1925—7.956 cts. per pound: 1926—7.41 cts. per pound.

Table 187.—Production of Zinc from Canadian Ores, 1898-1926

Year	Quantity	Value	Year	Quantity	Value
(From 1898 to 1904, quantities show pounds of zinc contained in ores or concentrates shipped from the mines)		\$			\$
1898 (a).....	788,000	36,011	1913.....	7,889	186,827
1899.....	814,000	46,805	1914.....	10,893	262,563
1900.....	212,800	9,342	1915.....	14,895	554,938
1901.....			(From 1916 to date, quantities show pounds of zinc recovered by Canadian smelters and estimated recoveries by foreign Smelters)		
1902.....	142,200	6,882	1916.....	23,364,760	2,991,623
1903.....	900,000	48,600	1917.....	29,668,764	2,640,817
1904.....	477,568	24,350	1918.....	35,083,175	2,862,436
(From 1905 to 1915 quantities show tons of ore or concentrates shipped from the mines)			1919.....	32,194,707	2,362,448
1905.....	9,413	139,200	1920.....	39,863,912	3,057,961
1906.....	1,154	23,800	1921.....	53,089,356	2,471,310
1907.....	1,573	49,100	1922.....	56,290,000	3,217,536
1908.....	452	3,215	1923.....	60,416,240	3,991,701
1909.....	(b) 18,371	242,699	1924.....	98,909,077	6,274,791
1910.....	5,063	120,003	1925.....	109,268,511	8,328,446
1911.....	2,590	101,072	1926.....	149,938,105	11,110,413
1912.....	6,415	211,774	Total.....		51,376,663

(a) No Mines Branch records of production prior to 1898.

(b) Includes 7,424 tons shipped late in 1908.

Table 188.—Production of Zinc from Canadian Ores, by Provinces, 1898-1926

Year	Quebec		Ontario		Alberta		British Columbia	
	Quantity	Value \$	Quantity	Value \$	Quantity	Value \$	Quantity	Value \$
From 1898 to 1904, quantities show pounds of zinc contained in ores or concentrates shipped from the mines)								
1898 (a).....	788,000	36,011						
1899.....			814,000	46,805				
1900.....	22,400	983	190,400	8,359				
1901.....								
1902.....			142,200	6,882				
1903.....			900,000	48,600				
1904.....			477,568	24,350				
(From 1905 to 1915 quantities show tons of ore or concentrates shipped from the mines)								
1905.....			500	6,700			9,413	139,200
1906.....			217	3,000			654	17,100
1907.....			452	3,215			1,356	46,100
1908.....			895	8,950			(b) 17,476	233,749
1909.....			576	5,760			4,487	114,243
1910.....							2,590	101,072
1911.....			10	375			6,405	211,399
1912.....							7,554	180,127
1913.....	335	6,700					9,924	252,546
1914.....	969	10,017					14,595	538,438
1915.....	300	16,500						
(From 1916 to date, quantities show pounds of zinc recovered by Canadian smelters and estimated recoveries by foreign Smelters.)								
1916.....	1,663,200	212,956					21,701,560	2,778,667
1917.....	1,786,740	159,038			20,583	1,832	27,861,441	2,479,947
1918.....	2,802,928	228,691					32,280,247	2,633,745
1919.....	1,752,000	128,562	147,692	10,838			30,295,015	2,223,048
1920.....	1,120,200	85,931	13,950	1,070			38,729,762	2,970,960
1921.....							53,089,356	2,471,310
1922.....							56,290,000	3,217,536
1923.....	366,240	24,197					60,050,000	3,967,504
1924.....	2,909,008	184,547					96,000,069	6,090,244
1925.....	9,936,000	757,322	179,545	13,685			99,152,966	7,557,439
1926.....	12,904,176	956,199					137,033,929	10,154,214
Total.....		2,807,654		188,589		1,832		48,378,588

(a) No Mines Branch records of production prior to 1898.

(b) Includes 7,424 tons shipped late in 1908.

Table 189.—Production of Refined Zinc at Trail, B.C., 1916-1926

Year	Short tons	Year	Short tons
1916.....	2,974	1922.....	28,145
1917.....	9,985	1923.....	30,025
1918.....	12,574	1924.....	27,444
1919.....	12,326	1925.....	38,462
1920.....	18,517	1926.....	61,727
1921.....	26,494		

**Imports and Exports.**—In 1926 the imports of zinc and zinc products into Canada reached a total value of \$1,890,328, an increase of more than \$200,000 over the years 1925 and 1924. Imports of brass and brass products were also greater than in either of the two preceding years.

Exports of zinc ore were slightly less in 1926 than in 1925 or in 1924 owing to the increase made in the capacity of the Sullivan concentrator while as a further result of the enlargement of the Trail smelter, exports of spelter increased from \$2,519,755 in 1924 to \$7,107,876 in 1926. Exports of brass manufactures and old scrap, amounted in value to \$853,000 in 1926 as against \$1,125,000 in 1925 and \$663,000 in 1924.

Table 190.—Imports into Canada and Exports of Zinc and Brass, 1924-1926

	1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value
<b>IMPORTS</b>		\$		\$		\$
<b>Zinc and Zinc Products—</b>						
Zinc, in blocks, pigs and sheets.....	3,073,644	259,847	4,322,335	407,236	5,797,282	582,784
Zinc, as spelter.....	1,230,251	84,486	1,265,510	100,736	1,122,640	86,779
Zinc white (80% Zn.).....	16,264,059	1,063,370	13,301,222	923,755	13,278,306	943,724
Zinc dust (90% Zn.).....	359,219	30,668	315,440	23,664	435,440	46,800
Zinc, sulphate and chloride of (44% Zn.).....	941,039	41,153	1,070,595	47,450	1,650,725	73,604
Zinc, manufactures of.....		176,564		178,230		156,637
<b>Total.....</b>		<b>1,656,088</b>		<b>1,686,971</b>		<b>1,890,328</b>
<b>Brass and Brass Products—</b>						
Brass, in blocks, pigs and ingots (30% Zn.).....	313,200	38,291	263,000	30,461	432,300	51,971
Brass, old and scrap (30% Zn.).....	3,002,400	272,307	3,604,900	344,303	2,669,500	265,637
Brass, tubing (30% Zn.).....	1,699,613	396,074	1,966,480	485,961	2,726,066	672,435
Brass, plain wire (30% Zn.).....	424,525	99,332	366,032	87,724	487,881	126,360
Brass, bars and rods.....	727,800	115,231	685,300	131,182	1,077,300	190,436
Brass, strips, sheets or plates.....	815,100	162,493	948,400	155,089	1,424,700	264,193
Brass, wire cloth, n.o.p.....		154,796		125,752		102,112
Brass, cup for manufacture of shells.....		119,993		106,373		115,141
Brass, caps for electric batteries.....		12,870		16,522		17,094
Brass, hand-pumps.....		16,970		15,739		20,567
Brass, nails, tacks, etc.....		3,467		4,503		1,777
Brass and copper rivets, burrs and washers.....		26,634		45,334		49,006
Brass valves.....		159,187		203,540		254,853
Brass, other manufactures, n.o.p.....		1,828,039		2,194,641		2,656,189
Carburettors of brass.....		237,482		252,521		146,248
Tubing, brass or copper, not more than ½-inch in diameter, in lengths not less than 6 feet, coated with metal, and not polished, bent or otherwise manufactured.....					883	205
<b>Total.....</b>		<b>3,643,166</b>		<b>4,202,645</b>		<b>4,934,224</b>
<b>EXPORTS</b>						
<b>Zinc—</b>	Tons		Tons		Tons	
Ore.....	63,931	1,626,031	48,340	1,778,019	41,917	1,393,165
Spelter.....	20,016	2,519,755	24,913	3,781,011	48,004	7,107,876
<b>Total.....</b>		<b>4,145,786</b>		<b>5,559,030</b>		<b>8,501,041</b>
<b>Brass—</b>	Pounds		Pounds		Pounds	
Old and scrap.....	6,000,200	429,704	9,819,600	838,908	6,071,400	536,889
Rods, sheets and tubing.....	5,800	1,134	49,400	10,663	59,900	13,089
Valves.....		177,883		160,727		161,899
Mfrs. of brass, n.o.p.....		54,837		114,676		141,878
<b>Total.....</b>		<b>663,558</b>		<b>1,124,974</b>		<b>853,755</b>

**Prices.**—The average price of zinc on the London market in 1926 was £34.105 per long ton which, converted at par, corresponded to 7.41 cents per pound in Canadian funds. This was the unit price used in 1926 when computing the value of Canada's zinc production. St. Louis prices were used for some years in computing the value of Canada's zinc production but since the greater part of this country's output is sold in European and Oriental countries on the basis of London quotations, it was thought that a more accurate measure of the actual return to the producer would be obtained by using the London quotations.

**Table 191.—Monthly Average Prices of Zinc at Montreal, St. Louis and London, 1924-1926**

Month	Montreal <sup>1</sup> (In cents per pound)			St. Louis <sup>2</sup> (In cents per pound)			London <sup>2</sup> (In pounds sterling, long ton)		
	1924	1925	1926	1924	1925	1926	1924	1925	1926
January.....	8.02	9.22	9.80	6.426	7.738	8.304	34.761	37.917	38.059
February.....	8.38	8.93	9.31	6.756	7.480	7.759	36.518	36.528	36.053
March.....	8.16	8.75	8.82	6.488	7.319	7.332	35.298	35.741	34.090
April.....	7.72	8.44	8.49	6.121	6.985	7.001	32.588	34.644	32.503
May.....	7.33	8.40	8.31	5.793	6.951	6.821	30.648	34.223	32.038
June.....	7.30	8.45	8.58	5.792	6.990	7.112	31.788	34.149	33.244
July.....	7.40	8.65	8.87	5.898	7.206	7.411	32.193	34.894	34.045
August.....	7.64	9.01	8.85	6.175	7.576	7.376	32.544	36.691	34.173
September.....	7.65	9.18	8.89	6.181	7.753	7.413	32.926	37.435	34.389
October.....	7.79	9.71	8.76	6.324	8.282	7.296	33.514	39.884	34.256
November.....	8.25	10.10	8.70	6.796	8.614	7.199	35.022	39.039	33.491
December.....	8.84	9.91	8.51	7.374	8.565	7.018	36.932	38.327	32.915
<b>Average.....</b>	<b>7.87</b>	<b>9.06</b>	<b>8.83</b>	<b>6.344</b>	<b>7.622</b>	<b>7.337</b>	<b>33.728</b>	<b>36.624</b>	<b>34.105</b>

<sup>1</sup>Supplied by Consolidated Mining and Smelting Co., Montreal, P.Q.

<sup>2</sup>Quoted from *Engineering and Mining Journal*.

Converted at par the average London quotation, in cents per pound were: In 1925—7.956 cents; in 1926—7.41 cents.

**Table 192.—\*World Production of Zinc.**

(From the *Year Book of the American Bureau of Metal Statistics* 1926)

(Short tons)

Country	1913	1922	1923	1924	1925	1926
United States.....	352,952	373,678	531,202	535,846	590,928	638,533
Mexico.....					1,406	6,550
Canada.....		27,782	30,025	27,443	38,481	61,727
Belgium.....	225,050	123,777	162,082	178,242	188,339	209,674
Czechoslovakia.....		2,254	2,413	7,603	3,307	3,527
France.....	74,815	43,779	54,381	63,614	70,834	79,867
Germany (Silesia excluded).....	(a) 307,238	38,360	35,467	45,745	64,620	75,278
Upper Silesia.....		83,345	92,425	85,615	108,192	117,499
Great Britain.....	73,000	20,529	35,033	43,098	42,726	20,148
Italy.....		2,901	4,060	6,569	7,141	8,411
Austria-Hungary.....	23,921					
Jugoslavia.....		7,666	8,601	2,343	2,460	2,619
Netherlands.....	26,804	14,327	18,126	20,051	23,277	27,333
Norway.....	10,234	2,039	4,170	5,538	7,503	7,716
Poland (Upper Silesia excluded).....	8,398	10,031	13,546	16,999	17,846	19,290
Soviet Union.....				661	1,663	3,307
Spain.....	3,650	6,910	12,039	14,084	16,669	17,704
Sweden.....	2,204	1,757	1,420	3,881	5,233	5,291
Australia.....	4,614	26,339	46,091	52,205	51,280	52,942
Japan.....	992	13,806	15,190	15,508	15,542	18,739
French Indo-China.....				143	1,276	1,102
<b>Total.....</b>	<b>1,113,872</b>	<b>799,280</b>	<b>1,066,276</b>	<b>1,125,188</b>	<b>1,258,713</b>	<b>1,377,257</b>

(\* Slab zinc produced in the several countries, unallocated according to the origin of the ore.

(a) Including Upper Silesia in 1913.

## CHAPTER FIVE

## THE NICKEL-COPPER INDUSTRY IN CANADA

Including Commodity Statistics Tables on NICKEL COPPER and METALS OF THE PLATINUM GROUP

1. General Review
2. Commodity Statistics including tables showing production by provinces, imports, exports, prices and world output of Nickel, Copper and Metals of the Platinum group.

## 1. General Review

*Definition of the Industry.*—The nickel-copper industry in Canada includes the mining, smelting, and to a certain extent, the refining of the nickel-copper ores of the Sudbury district in the province of Ontario. Smelting operations are carried on in close proximity to the mines, and refining is done at Port Colborne in Ontario by one of the companies, while the other exports matte for treatment in its refinery at Clydach, Wales.

As thus defined, the industry takes in the Canadian sources of nickel, metals of the platinum group, and one of the principal sources of copper.

Another industry, the copper-gold-silver mining group also produces a large part of the Dominion output of copper, but as the ores of this group, in the aggregate, usually carry about one-tenth of the gold produced each year from Canadian mines, the activities of the copper-gold mines are reviewed in the chapter on the gold mining industry. Production and trade statistics on nickel, copper and the metals of the platinum group are given in this chapter.

*Historical.*—Construction of railways in Canada has led in several instances to the discovery of valuable mineral deposits as for example, the finding of the nickel-copper ore bodies in the Sudbury area when the Canadian Pacific Railway was being built in 1883. The first of these, found high in copper, was worked in 1886 primarily for copper, the presence of nickel not being detected until 1887. About this time the use of nickel in the manufacture of nickel steel was introduced and the resulting demand for nickel made possible the successful development of the great industry that has now become firmly established. Nickel steel was made in large quantities for armament purposes, and nickel production reached its peak during the great war. After hostilities ceased, the demand for nickel was considerably reduced and the nickel industry was depressed. Then, through intensive research, new uses for nickel were found so that now production, is once again gradually approaching the peak output figure won during the great war.

Smelting of the nickel-copper ore, containing on the average about 6 per cent combined nickel and copper, produces a matte containing about 80 per cent metal, of which about 52 per cent is nickel and the 28 per cent, is copper. Little variation has been observed in the ratio of nickel to copper in the matte made over a period of years, but recently there has been a perceptible increase in the percentage of copper in the ore as it comes from the mines.

It has been the practice of the company refining nickel in Canada to produce blister copper for export; the other company ships matte to its own refinery in Wales. The blister copper exported from Ontario is subsequently refined, and marketed as metal; the copper in matte exported to Wales is recovered in the form of copper sulphate, and sold as a fungicide and insecticide for use in the vineyards of Southern Europe.

*Importance of Nickel, Copper and Platinum Group Metals.*—About 90 per cent of the world's supply of nickel is derived from Canadian ores, the remainder being obtained in New Caledonia and Norway. A small amount of nickel is found in the silver-cobalt ores of the Cobalt district, but most of the tonnage is produced from the ores of the Sudbury area.

Copper produced from the nickel-copper ores in Ontario constitutes about 35 per cent of the total copper obtained from all Canadian ores. British Columbia, mining and smelting copper ores and copper-gold ores, produces more than 60 per cent of Canada's copper output. Quebec supplies the remainder.

As a world producer of copper, Canada ranks seventh, contributing about 4 per cent of the world's output annually. The amount of refined copper produced in Canada increased very considerably in 1926, but the output is still relatively small as, usually, it has been found more profitable not to refine in Canada but to ship blister copper or copper in matte or in concentrates, to smelters in other countries where the demand for refined copper is greater than in Canada. Improvement in Canadian demand for the refined metal may be expected as a phase of the industrial expansion now being observed, and the output of refined copper from Canadian plants, ought to increase proportionately, unless other untoward features of the market arise to check this progress.

Some gold and silver as well as metals of the platinum group, including, besides platinum, the related metals, palladium, rhodium, osmium and iridium, are present in varying amounts in the different ores of the Sudbury district. Some of these ores are richer than others in precious metals, and the recovery of platinum group metals, therefore, has been a feature of the work done by one of the great nickel companies, while the other company has found it profitable to enter this field only comparatively recently when the improved grade of ore being mined, was found sufficiently rich to make the additional work worth while.

At the present time, Canada produces about 8 per cent of the world's supply of platinum, but recovery of much of this metal is carried out in refineries operating outside the confines of the Dominion.

*Mining.*—During 1926 the Mond Nickel Company operated the Garson, Worthington, Levack and Frood Extension mines, while the International Nickel Company of Canada operated the Creighton mine and the Frood mine. The ore in the Sudbury district averages from 2 to 4 per cent of nickel and from 1 to 3 per cent of copper, and is a mixture of the sulphides of copper, nickel and iron in the form of pyrrhotite and chalcopyrite associated with norite, a basic intrusive rock. Open-pit methods of mining were first used, but later, underground workings were adopted. Shafts are sunk and haulage ways are driven into a solid foot wall, the ore being intersected at intervals by cross cuts. The ore is usually hoisted to rock houses where it is crushed and hand-sorted; the high-grade material is suitable for direct smelting. Ore from the Frood mine cannot be hand-sorted satisfactorily because the precious metals are finely disseminated through the vein-bearing rock, so that crushing and concentration of the product from the mine are necessary before smelting can be undertaken with satisfactory results.

*Smelting and Refining.*—Practice in the preparation of the ore for smelting varies. The International Nickel Company heap-roasts the coarse ore before smelting, and the Mond Nickel Company roasts only the fines and flue dust on Dwight-Lloyd sintering machines. Both companies smelt in water-jacketed furnaces, producing a slag which is sent to the dump, and a matte which contains 15 to 25 per cent of copper-nickel in addition to sulphur. This low-grade matte is transferred to a basic converter where practically all of the iron and part of the sulphur are eliminated. The product of these converters, Bessemer matte, contains about 80 per cent copper-nickel; 19.5 per cent sulphur; and 0.5 per cent iron; this product is shipped to the refineries for further treatment.

The International Nickel Company ships some matte to the Port Colborne refinery, where the products are converter copper, electrolytic nickel, refined nickel and nickel oxide; and residues containing palladium, platinum, some gold, silver and other metals. This company exports the remainder of the matte produced at the smelter to Huntington, West Virginia, U.S.A., for manufacture into monel metal, an alloy of copper and nickel in which the constituents are present in about the same proportions in which they occur in the ore and are not separated during refining process.

The Mond Nickel Company ships the smelter matte to the company's refinery at Clydach, Wales, for reduction. The refinery produces nickel metal of very high purity that finds many uses in the metallurgical field, and copper sulphate, mostly for use as an insecticide. Much of the nickel from the Mond plant near Clydach, Wales, is shipped to plants in other countries, notably the United States, for use in the manufacture of nickel alloys.

A considerable market has been built up for these alloys because of their resistance to corrosion. Chemical works, creameries, and other plants of a similar nature, are gradually increasing their uses of nickel and its alloys.

In 1925 the Mond company commenced production of sulphuric acid at Coniston, using the sulphur gases from the bessemer converters as the raw material. Success attended the operations and production of sulphuric acid of great purity and at a low cost, has grown rapidly. Sufficient market was found for the acid, to justify the enlargement of the plant, and the capacity was doubled during the year.

*General Statistics.*—During the year 1926 there were 1,322,050 tons of ore raised and shipped either to the concentrators or direct to the smelters, the metallic content being about 27,500 tons of copper and 45,000 tons of nickel. In the same year smelters received 1,322,050 tons of ore and smelted 1,309,782 tons, producing 78,643 tons of matte containing 39,038 tons of nickel and 24,159 tons of copper. Smelter matte shipped to Canadian refineries during the year amounted to 34,042 tons; shipments to United States and British refineries totalled 34,908 tons.

In the nickel-copper mining, smelting and refining industry the capital employed amounted to \$68,015,349 including the cost of lands, buildings, plant, machinery and tools, supplies and products on hand, and cash, trading and operating accounts at the different mines, smelters and refineries.

Salaried employees numbered 160 persons, and salaries totalled \$494,913. Of 3,131 wage-earners, 1,416 worked in and about the mines and 1,715 in the smelters and refinery; wages for the year totalled \$4,359,065.

Fuel and electricity cost \$2,438,203 of which \$249,171 was expended for electric power; \$1,338,234 for coke; \$566,162 for bituminous coal; \$239,643 for fuel oil; and the remainder was spent for other fuels, such as anthracite coal, gasoline, wood and gas.

Power employed consisted of 665 units having a total rating of 50,745 h.p. Of these, 18 units rated at 4,708 h.p. were steam engines and oil engines, and the remaining 647 units with a rating of 46,037 h.p., were electric motors.

**Table 193.—Capital Employed in the Nickel-Copper Industry in Canada, 1925 and 1926**

	1925	1926
	\$	\$
Lands, buildings, plant, machinery and tools:—		
Mines.....	38,316,904	38,202,370
Smelters and refinery.....	17,206,204	17,991,365
Cost of materials and supplies on hand.....	4,907,157	6,156,721
Cash, trading and operating accounts and bills receivable.....	5,315,404	5,664,893
<b>Total.....</b>	<b>65,745,669</b>	<b>68,015,349</b>

**Table 194.—Output from Nickel-Copper Mines and Smelters in Canada, 1925 and 1926**

		1925	1926
Ore mined.....	Tons	1,264,748	1,322,050
Ore shipped.....	Tons	1,264,748	1,322,050
Content of ores, etc., shipped:—			
Copper.....	Lb.	44,007,830	55,096,719
Nickel.....	Lb.	85,305,242	90,110,865
Ore and concentrates treated at smelters.....	Tons	1,258,849	1,309,782
Matte produced.....	Tons	70,286	78,643
Content of matte:—			
Copper.....	Lb.	39,272,899	48,318,735
Nickel.....	Lb.	73,191,262	78,076,003
Matte shipped to Canadian refineries.....	Tons	38,567	34,042
Matte exported to foreign refineries.....	Tons	32,397	34,908

Table 195.—Proportion of Nickel and Copper in Sudbury Matte, 1912-1926

Year	Percentage		
	Nickel	Copper	Total
1912	53.5	26.3	79.8
1913	52.7	27.4	80.1
1914	49.0	31.1	80.1
1915	50.3	29.0	79.3
1916	51.6	28.0	79.6
1917	50.6	26.9	77.5
1918	52.6	26.0	78.6
1919	51.6	28.3	79.9
1920	52.7	27.6	80.3
1921	49.4	32.4	81.8
1922	50.1	31.3	81.4
1923	53.4	27.2	80.6
1924	52.6	27.9	80.5
1925	52.1	27.9	80.0
1926	49.6	30.6	80.2

Table 196.—Employees, Salaries and Wages, in the Nickel-Copper Industry in Canada, 1925 and 1926.

	1925				1926			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
<b>SALARIED EMPLOYEES—</b>								
At the mines.....	20		20	64,738	21		21	65,625
At the smelters and refinery.....	124	19	143	390,317	124	15	139	429,288
Total.....	144	19	163	455,055	145	15	160	494,913
<b>WAGE-EARNERS—</b>								
At the mines.....	1,392		1,392	1,802,479	1,416		1,416	1,897,992
At the smelters and refinery.....	1,878		1,878	2,602,365	1,715		1,715	2,461,073
Total.....	3,270		3,270	4,404,844	3,131		3,131	4,359,065
<b>Grand Total.....</b>	<b>3,414</b>	<b>19</b>	<b>3,433</b>	<b>4,859,899</b>	<b>3,276</b>	<b>15</b>	<b>3,291</b>	<b>4,853,978</b>

Table 197.—Employees by Months in the Nickel-Copper Industry in Canada, 1925 and 1926

	At the mines			At the smelters	At the refineries	Total
	Surface	Under ground	Total			
1925	No.	No.	No.	No.	No.	No.
January.....	441	868	1,309	1,201	526	3,036
February.....	463	904	1,367	1,202	610	3,179
March.....	503	907	1,410	1,236	594	3,240
April.....	523	904	1,427	1,255	479	3,161
May.....	509	892	1,401	1,253	593	3,247
June.....	519	892	1,411	1,231	609	3,251
July.....	494	877	1,371	1,235	441	3,047
August.....	641	845	1,486	1,268	584	3,338
September.....	561	865	1,426	1,308	627	3,361
October.....	549	873	1,422	1,333	609	3,364
November.....	500	921	1,421	1,278	572	3,271
December.....	472	895	1,367	1,301	594	3,262
1926						
January.....	456	904	1,360	1,277	604	3,241
February.....	438	926	1,364	1,266	540	3,170
March.....	414	932	1,346	1,227	578	3,151
April.....	434	893	1,327	1,187	606	3,120
May.....	443	907	1,350	1,191	317	2,858
June.....	448	940	1,388	1,171	289	2,848
July.....	486	919	1,405	1,182	515	3,102
August.....	516	927	1,443	1,214	533	3,190
September.....	533	950	1,483	1,235	505	3,223
October.....	542	967	1,509	1,233	513	3,255
November.....	533	990	1,523	1,256	450	3,229
December.....	512	994	1,506	1,257	428	3,191

Table 198.—Fuel and Electricity Used in the Nickel-Copper Industry in Canada, 1925 and 1926

Kind	1925			1926		
	Mines	Smelters and refinery	Total	Mines	Smelters and refineries	Total
Bituminous coal.....Ton	3,427	86,628	90,055	3,190	90,233	93,423
\$	29,418	500,498	529,916	24,853	541,309	566,162
Anthracite coal.....Ton	55	149	204	3	135	138
\$	889	2,406	3,295	48	2,164	2,212
Coke.....Ton	335	151,854	152,189	382	145,015	145,397
\$	4,043	1,514,938	1,518,981	4,369	1,333,865	1,338,234
Gasoline.....Imp. gal.	225	10,291	10,516	410	11,339	11,749
\$	64	3,009	3,073	127	3,605	3,732
Fuel oil.....Imp. gal.	29,477	3,626,831	3,656,308	29,901	2,539,566	2,569,467
\$	3,391	309,567	312,958	3,785	235,858	239,643
Wood.....cord	4	5,085	5,089		5,780	5,780
\$	27	31,918	31,945		38,934	38,934
Gas.....M cu. ft.		180	180		144	144
\$		152	152		115	115
Electric power.....k.w.h.	30,945,186	65,866,307	96,811,493	32,344,297	71,656,081	104,000,378
\$	67,738	175,924	243,662	62,439	186,732	249,171
<b>Total.....\$</b>	<b>105,570</b>	<b>2,538,412</b>	<b>2,643,982</b>	<b>95,621</b>	<b>2,342,582</b>	<b>2,438,203</b>

Table 199.—Power Employed in the Nickel-Copper Industry in Canada, 1925 and 1926

Description	1925			1926		
	Mines	Smelters and Refinery	Total	Mines	Smelters and Refinery	Total
Steam engines and turbines.....No. Units		17	17		17	17
H.P.		4,655	4,655		4,655	4,655
Oil and gasoline engines.....No. Units					1	1
H.P.					53	53
<i>Total primary power.....No. Units</i>		17	17		18	18
<i>H.P.</i>		4,655	4,655		4,708	4,708
Electric motors run by purchased power.....No. Units	152	440	592	165	482	647
H.P.	14,332	27,219	41,551	15,345	30,692	46,037
<b>Total power employed.....No. Units</b>	<b>152</b>	<b>457</b>	<b>609</b>	<b>165</b>	<b>500</b>	<b>665</b>
<b>H.P.</b>	<b>14,332</b>	<b>31,874</b>	<b>46,206</b>	<b>15,345</b>	<b>35,400</b>	<b>50,745</b>
<i>Total electric motors.....No. Units</i>	<i>152</i>	<i>440</i>	<i>592</i>	<i>165</i>	<i>482</i>	<i>647</i>
<i>H.P.</i>	<i>14,332</i>	<i>27,219</i>	<i>41,551</i>	<i>15,345</i>	<i>30,692</i>	<i>46,037</i>
Boilers.....No. Units		12	12		12	12
H.P.		5,200	5,200		5,200	5,200

2. Commodity Statistics on Nickel, Copper and Metals of the Platinum Group.

NICKEL

**Production.**—Nickel production in 1926 amounted to 65,714,294 pounds valued at \$14,374,163 as against the 1925 production of 73,857,114 pounds valued at \$15,946,672. These figures include nickel in matte and speiss exported from the Canadian smelters valued at 18 cents per pound; refined and electrolytic nickel produced in Canada, valued at the average price received for sales of nickel metal from the refinery during the year; and the nickel equivalent in oxides and salts sold, valued in the aggregate at the sum obtained from the sales of oxides and salts.

Table 200.—Production of Nickel from Canadian Ores, 1889-1926

Year	Pounds of nickel	Cents per pound	Value	Year	Pounds of nickel	Cents per pound	Value
			\$				\$
1889.....	830,477	60	498,286	1909.....	26,282,991	36	9,461,877
1890.....	1,435,742	65	933,232	1910.....	37,271,033	30	11,181,310
1891.....	4,035,347	60	2,421,208	1911.....	34,098,744	30	10,229,623
1892.....	2,413,717	58	1,399,956	1912.....	44,841,542	30	13,452,463
1893.....	3,982,982	52	2,071,151	1913.....	49,676,772	30	14,903,032
1894.....	4,907,430	38½	1,870,948	1914.....	45,517,937	30	13,655,381
1895.....	3,888,525	35	1,360,984	1915.....	68,308,697	30	20,492,597
1896.....	3,397,113	35	1,188,990	1916.....	82,958,564	35	29,035,497
1897.....	3,997,647	35	1,399,176	1917.....	84,330,280	40	33,732,112
1898.....	5,517,690	33	1,820,838	1918.....	92,507,293	40	37,002,917
1899.....	5,744,000	36	2,067,840	1919.....	44,544,883	40	17,817,953
1900.....	7,080,227	47	3,327,707	1920.....	61,335,708	40	24,534,282
1901.....	9,189,047	50	4,594,523	1921.....	19,293,060	35	6,752,571
1902.....	10,693,410	47	5,025,903	1922.....	17,597,123	35	6,158,993
1903.....	12,505,510	40	5,002,204	1923.....	62,453,843	29-353	18,332,077
1904.....	10,547,883	40	4,219,153	1924.....	69,536,350	28	19,470,178
1905.....	18,876,315	40	7,550,526	1925.....	73,857,114	34	15,946,672
1906.....	21,490,955	42	8,948,834	1926.....	65,714,294	36	14,374,163
1907.....	21,189,793	45	9,535,407				
1908.....	19,143,111	43	8,231,538	<b>Total.....</b>	<b>1,150,993,107</b>		<b>390,002,112</b>

Table 201.—Imports into Canada and Exports of Nickel 1924-1926

	1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Nickel, nickel silver and German silver, in ingots or blocks, n.o.p.....	21,761	8,591	6,758	1,398	12,253	4,897
Nickel in bars and rods, strips, sheets and plates.....	624,173	111,827	832,775	150,167	1,001,247	206,466
Nickel silver and German silver, in bars, rods, strips, sheets, plates or anodes.....	229,182	59,609	220,429	60,144	104,866	31,491
German, Nevada and nickel silver, manufactures of, not plated.....		193,283		224,984		312,568
Nickel-plated household hollow-ware.....		39,345		22,907		17,461
Nickel-plated ware, n.o.p.....		1,219,515		1,371,161		1,526,959
<b>Total.....</b>		<b>1,632,170</b>		<b>1,830,761</b>		<b>2,099,842</b>
<b>EXPORTS—</b>						
Nickel, fine, contained in ore, matte or speiss.....	36,712,200	5,176,907	40,207,900	6,693,805	39,177,400	6,074,497
Nickel, fine.....	25,985,800	5,090,059	30,116,400	5,980,920	24,698,400	6,386,387
<b>Total.....</b>	<b>62,698,000</b>	<b>10,266,966</b>	<b>70,324,300</b>	<b>12,674,725</b>	<b>63,875,800</b>	<b>12,460,884</b>

**Prices.**—New outlets for nickel have been found in part in the adaptability of nickel for the cooking-utensil trade, in the manufacture of resistance wires in electric heating appliances, as a material for coinage, as a constituent of numerous alloys, and in the growing use of the metal in the motor-car industry. The average price per pound in recent years has been as follows: 1921—35·0 cents; 1922—35·0 cents; 1923—29·3 cents; 1924—28·0 cents; 1925—34·0 cents; and 1926—36·0 cents.

## 202.—World Production of Nickel Ore, 1922-1926

(In terms of metal)

\*(From *The Mineral Industry of the British Empire and Foreign Countries.*)

(Short tons)

Country	1922	1923	1924	1925	1926
British Empire—					
Canada.....	8,798	31,225	34,768	36,929	32,860
*Foreign Countries—					
Germany.....		(a) 3			
Italy.....	(b)	49	1	7	
Norway.....	102	68			
(c) United States.....	208	100	192	272	306
(d) New Caledonia.....	3,907	2,939	4,032	3,718	4,211
<b>Total.....</b>	<b>13,015</b>	<b>34,384</b>	<b>38,993</b>	<b>40,926</b>	<b>37,377</b>

(a) Ore, nickel content not stated.

(b) Less than  $\frac{1}{2}$  ton.

(c) Nickel content of salts and nickel produced as a by-product in the electrolytic refining of copper.

(d) Exports.

## COPPER

**Production.**—Copper is produced in Canada in the provinces of British Columbia, Ontario and Quebec. British Columbia accounted for 67 per cent of the Canadian output, Ontario 31 per cent, and Quebec, 2 per cent. Large deposits are known to occur in north-western Manitoba and in the Rouyn district of Quebec. These areas are being developed at present, and when the production stage is reached the output from these two provinces will contribute largely to the Canadian total.

Copper production from Canadian ores in 1926, amounted to 133,094,942 pounds valued at \$17,490,300 as compared with 111,450,518 pounds valued at \$15,649,882 in 1925. This was an increase of 18 per cent in quantity and 12 per cent in value.

The total output included (a) 43,597,943 pounds contained in ores and concentrates exported and (b) 89,496,999 pounds of electrolytic copper, blister copper, copper in copper-nickel matte exported, and copper in copper sulphate made during the year.

**NOTE.**—A new method has been adopted in computing the quantity and value of copper produced in Ontario. Prior to 1926, Canadian copper production statistics included the recoverable copper in ores exported, blister copper made at the Trail and Anyox smelters, and copper in matte made by the nickel companies, all valued at the average New York price for electrolytic copper during the year. The new method provides for inclusion of data on the copper content of converter copper made at Port Colborne, and on recoverable copper in matte and ores exported. Values include (a) the value of the refinery output determined on the basis of sales during the year; (b) copper in matte exported at 10 cents a pound; and (c) recoverable copper in concentrates exported at its market value.

No change has been made in the methods used heretofore in making up the copper statistics for the provinces of British Columbia and Quebec.

For comparative purposes, the following tables for 1925 and 1926 have been prepared to show the totals obtained by both methods.

Table 203.—Production of Copper in Canada, by Provinces, 1925 and 1926

Province	1925		1926	
	Pounds	Value \$	Pounds	Value \$
(a) Calculated as in previous reports—				
British Columbia.....	69,221,600	9,720,097	89,108,017	12,292,450
Ontario.....	39,718,777	5,577,311	48,726,431	6,721,811
Quebec.....	2,510,141	352,474	2,674,058	368,886
<b>Total.....</b>	<b>111,450,518</b>	<b>15,649,882</b>	<b>140,508,506</b>	<b>19,383,147</b>
(b) Calculated according to method used in 1926—				
British Columbia.....	69,221,600	9,720,097	89,108,017	12,292,450
Ontario.....	39,698,982	4,771,424	41,312,867	4,828,964
Quebec.....	2,510,141	352,474	2,674,058	368,886
<b>Total.....</b>	<b>111,430,723</b>	<b>14,843,995</b>	<b>133,094,942</b>	<b>17,490,300</b>

Price of copper 1925—14.042 cents per pound.

Price of copper 1926—13.795 cents per pound.

British Columbia's production of copper amounted to 89,108,017 pounds, including blister copper made at the Trail and Granby smelters and the recoverable copper in the copper ores and concentrates from the Britannia and Belmont Surf Inlet mines shipped to United States smelters. The Belmont Surf Inlet mine ceased operations in June, 1926.

Ontario's copper production was obtained chiefly in the smelting of the nickel-copper ores from the Sudbury district. The matte made by the Mond Nickel Company was shipped to Wales for refining. There the copper was extracted in the form of copper sulphate, for sale to the vineyards in southern France and Italy. Some matte made by the International Nickel Company at Coppercliff was exported to Huntington, West Virginia, U.S.A., for manufacture directly into monel metal; the remainder was shipped to the company's refinery at Port Colborne, Ontario, and there produced as converter copper.

The Argonaut mine, which originally produced gold only, shipped copper concentrates to United States smelters for refining. A small amount of copper was recovered from the silver-cobalt ores.

Considerable work was done during the year on the copper ores of the Flin Flon mine in northern Manitoba and it is understood that a pilot mill will be erected for further research on these ores.

Refined copper was produced commercially in quantity for the first time in Canada in 1916 at the Trail refinery of the Consolidated Mining and Smelting Company. The British America Nickel Corporation which produced refined copper at the Deschenes refinery for the first time in 1920, went into liquidation during July, 1924. The total production of refined copper in Canada during the past eleven years was as follows:—

Calendar year 1916.....	483 tons
1917.....	3,901 tons
1918.....	3,809 tons
1919.....	3,467 tons
1920.....	2,590 tons
1921.....	2,143 tons
1922.....	365 tons
1923.....	824 tons
1924.....	1,768 tons
1925.....	170 tons
1926.....	10,581 tons

Copper sulphate was produced at Trail, B.C., by the Consolidated Mining and Smelting Company. Formerly, the Coniagas Reduction Company at Thorold, Ontario, was also a producer of this commodity. The outputs in recent years have been as follows: in 1921—643,910 pounds; in 1922—230,835 pounds; in 1923—307,135 pounds; in 1924—127,301 pounds; in 1925—121,746 pounds; and in 1926—404,862 pounds.

Table 204.—Production of Copper from Canadian Ores, 1886-1926

Year	Pounds	Value	Cents per pound	Year	Pounds	Value	Cents per pound
		\$				\$	
1886.....	3,505,000	385,550	11-00	1907.....	56,979,205	11,398,120	20-004
1887.....	3,260,424	366,798	11-25	1908.....	63,702,873	8,413,876	13-208
1888.....	5,562,864	927,107	16-66	1909.....	52,493,863	6,814,754	12-982
1889.....	6,809,752	936,341	13-75	1910.....	55,692,369	7,094,094	12-738
1890.....	6,013,671	947,153	15-75	1911.....	55,648,011	6,886,998	12-376
1891.....	9,529,401	1,226,703	12-87	1912.....	77,832,127	12,718,548	16-341
1892.....	7,087,275	818,580	11-55	1913.....	76,976,925	11,753,606	15-269
1893.....	8,109,856	871,809	10-75	1914.....	75,735,960	10,801,606	13-602
1894.....	7,708,789	736,960	9-56	1915.....	100,785,150	17,410,635	17-275
1895.....	7,771,639	836,228	10-76	1916.....	117,150,028	31,867,150	27-202
1896.....	9,393,012	1,021,960	10-88	1917.....	109,227,332	29,687,989	27-180
1897.....	13,300,802	1,501,660	11-29	1918.....	118,769,434	29,250,536	24-628
1898.....	17,747,136	2,134,980	12-03	1919.....	75,053,581	14,028,265	18-691
1899.....	15,078,475	2,655,319	17-61	1920.....	81,600,691	14,244,217	17-456
1900.....	18,937,132	3,065,922	16-19	1921.....	47,620,820	5,953,555	12-502
1901.....	37,827,019	6,096,581	16-117	1922.....	42,879,818	5,738,177	13-382
1902.....	38,804,259	4,511,383	11-626	1923.....	86,881,537	12,529,186	14-421
1903.....	42,684,451	5,649,487	13-235	1924.....	104,457,447	13,604,533	13-024
1904.....	41,383,722	5,306,635	12-823	1925.....	111,450,518	15,649,882	14-042
1905.....	48,092,753	7,497,660	15-590	1926.....	133,094,942	17,490,300	13-795
1906.....	55,609,888	10,720,474	19-278				
				Total.....	2,048,249,960	341,051,322	

QUEBEC

Production of copper from the province of Quebec amounted to 2,674,058 pounds in 1926 as against 2,510,141 pounds in 1925. This was the estimated recovery of copper contained in concentrates shipped by the Eustis mine to United States smelters.

There was continued activity in the copper-gold fields of western Quebec. Diamond drilling, shaft sinking and drifting on the several new properties opened up ore bodies of considerable size. Building of a smelter for the Horne Copper Corporation was started early in the spring of 1926 and it was expected that this would be put in operation during the latter part of 1927, for the treatment of customs' ores as well as for the reduction of the ores from the Horne mine.

Table 205.—Production of Copper from Quebec Ores, 1886-1926

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	3,340,000	367,400	1901.....	1,527,442	246,178	1916.....	5,703,347	1,551,424
1887.....	2,937,900	330,514	1902.....	1,640,000	190,666	1917.....	5,015,560	1,363,229
1888.....	5,562,864	927,107	1903.....	1,152,000	152,467	1918.....	5,899,649	1,445,577
1889.....	5,315,000	730,813	1904.....	760,000	97,455	1919.....	2,691,695	503,105
1890.....	4,710,606	741,920	1905.....	1,621,243	252,752	1920.....	880,638	153,724
1891.....	5,401,704	695,469	1906.....	1,931,169	331,930	1921.....	352,308	44,045
1892.....	4,383,480	564,042	1907.....	1,517,990	303,650	1922.....		
1893.....	4,468,352	480,348	1908.....	1,282,024	169,330	1923.....		
1894.....	2,176,430	208,067	1909.....	1,088,212	141,272	1924.....	1,893,008	246,546
1895.....	2,242,462	241,288	1910.....	877,347	111,757	1925.....	2,510,141	352,474
1896.....	2,407,200	261,003	1911.....	2,436,190	301,503	1926.....	2,674,058	368,886
1897.....	2,474,970	270,424	1912.....	3,282,210	536,346			
1898.....	2,100,235	252,658	1913.....	3,455,887	527,679			
1899.....	1,632,560	287,494	1914.....	4,201,497	571,488	Total.....	110,484,860	17,466,472
1900.....	2,220,000	359,418	1915.....	4,197,482	725,115			

ONTARIO

Statistics of copper production in Ontario for 1926 included the copper contained in the converter copper made at Port Colborne by the International Nickel Company, Limited, the recoverable copper in flotation concentrates exported by the mines of the Cobalt district, and the recoverable copper in gold ores and concentrates exported. As thus computed, the total output for 1926 amounted to 41,312,867 pounds as against a production of 39,698,982 pounds computed on the same basis in 1925. In 1925, and in previous years, production from Ontario, as then reported, included the amounts of recoverable copper in the copper-nickel matte made in the smelting of nickel ores and the recoverable copper in concentrates and ores exported.

In 1925 this amounted to 39,718,777 pounds. A change has been made in the method of computation, as noted in the paragraphs at the beginning of this section, relating to copper production in Canada as a whole.

The bounty offered by the Ontario government on copper 95 per cent pure and on copper sulphate produced from ore mined and refined in the province was never gained and the Act known as the *Metal Refining Bounty Act* warranting the bounty, which expired April 10, 1917, was not re-enacted.

**Table 206.—Production of Copper from Ontario Ores, 1886-1926**

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1886.....	165,000	18,150	1900.....	6,740,058	1,091,215	1914.....	28,948,211	3,937,536
1887.....	322,524	36,284	1901.....	8,695,831	1,401,507	1915.....	39,361,464	6,799,693
1888.....			1902.....	7,408,202	861,278	1916.....	44,997,035	12,240,094
1889.....	1,466,752	201,678	1903.....	7,172,533	949,285	1917.....	42,867,774	11,651,461
1890.....	1,303,065	205,233	1904.....	4,913,594	630,070	1918.....	47,074,475	11,593,502
1891.....	4,127,697	531,234	1905.....	8,779,259	1,368,686	1919.....	24,346,623	4,550,627
1892.....	2,203,795	254,538	1906.....	10,638,231	2,050,838	1920.....	32,059,993	5,596,392
1893.....	3,641,504	391,461	1907.....	14,104,337	2,821,432	1921.....	12,821,385	1,602,930
1894.....	5,207,679	497,854	1908.....	15,005,171	1,981,883	1922.....	10,943,636	1,464,477
1895.....	4,576,337	492,414	1909.....	15,746,699	2,044,237	1923.....	31,656,800	4,565,227
1896.....	3,167,256	344,598	1910.....	19,259,016	2,453,213	1924.....	37,113,193	4,833,622
1897.....	5,500,652	621,023	1911.....	17,932,263	2,219,297	1925.....	39,718,777	5,577,311
1898.....	8,375,223	1,007,539	1912.....	22,250,601	3,635,971	1926.....	41,312,867	4,828,964
1899.....	5,723,324	1,007,877	1913.....	25,885,929	3,952,522			
						<b>Total.....</b>	<b>663,534,765</b>	<b>112,313,153</b>

#### MANITOBA

During the years 1917 to 1920 the province of Manitoba was on record as one of the copper-producing provinces in Canada. The total production for the four years amounted to 9,866,328 pounds of copper having a total value of \$2,039,942. Production in each year was as follows: 1917—1,116,000 pounds, valued at \$303,329; 1918—2,339,751 pounds valued at \$576,234; in 1919—3,348,000 pounds valued at \$625,775; and in 1920—3,062,577 pounds valued at \$534,604. These amounts were estimated as the recoverable copper in ores shipped by the Mandy Mining Company operating near Schist lake in The Pas district of northern Manitoba. No copper ores were shipped during the years 1921 to 1926. Considerable experimental work is now being carried on at Flin Flon mine and favourable results are expected.

#### BRITISH COLUMBIA

British Columbia, the greatest copper-producing province of the Dominion, was credited in 1926 with a production of 89,108,017 pounds, the greatest of any year on record, as against 69,221,600 pounds in 1925. The output from this province amounted to 67 per cent of the total Canadian production for 1926 as against 62 per cent in 1925.

In this total there are included the quantities of blister copper produced at Anyox by the Granby Consolidated Mining, Smelting and Power Company; blister copper made by the Consolidated Mining and Smelting Company at Trail; copper contained in copper sulphate made by the same company; and the copper estimated as recoverable from ores and concentrates exported. The principal copper-producing mines in British Columbia are the Britannia mine on Howe Sound which ships its concentrates to Tacoma, Washington, U.S.A.; the Hidden Creek mine on Portland Canal; and the Allenby Copper Corporation, owned and operated by the Granby Consolidated Mining, Smelting and Power Company, Limited. The Hidden Creek ores are smelted at the Anyox smelter and the Allenby concentrates, from Copper Mountain ore, are shipped to the Trail smelter. The Belmont Surf Inlet ceased operations June 30, 1926. Small shipments were made from the Rossland mines to the smelter at Trail.

Table 207.—Production of Copper from British Columbia Ores, 1894-1926

Year	Pounds	Value	Year	Pounds	Value	Year	Pounds	Value
		\$			\$			\$
1894*	324,680	31,039	1906*	42,990,488	8,287,706	1918	62,865,681	15,482,560
1895*	952,840	102,526	1907*	40,832,720	8,168,177	1919	44,502,079	8,317,884
1896*	3,818,556	415,459	1908	37,041,115	4,892,390	1920	45,319,771	7,911,019
1897*	5,325,180	601,213	1909	35,658,952	4,629,245	1921	34,447,127	4,306,580
1898*	7,271,678	874,783	1910	35,270,006	4,492,693	1922	31,936,182	4,273,700
1899*	7,722,591	1,359,948	1911	35,279,558	4,366,198	1923	55,224,737	7,963,959
1900*	9,977,080	1,615,289	1912	50,526,656	8,256,561	1924	65,451,246	8,524,370
1901*	27,603,746	4,448,896	1913	45,791,579	6,991,916	1925	69,221,600	9,720,097
1902*	29,636,057	3,445,488	1914	41,219,202	5,606,636	1926	89,108,017	12,292,450
1903*	34,359,921	4,517,735	1915	56,692,988	9,793,714			
1904*	35,710,128	4,579,110	1916	63,642,550	17,312,046			
1905*	37,692,251	5,876,222	1917	57,730,959	15,691,275			
						Total	1,241,147,921	205,178,884

\*Metal content of ores shipped as published by the Provincial Bureau of Mines.

YUKON

There are important deposits of copper bearing ore known to exist in the Yukon Territory some of which were operated during the period from 1906 until 1920. Since the latter year, no production of copper has been reported, and the grand total for the Territory remains at 12,912,507 pounds, or a little greater than that of Manitoba.

Table 208.—Production of Copper from Yukon Ores, 1906-1926

Year	Pounds	Value	Year	Pounds	Value
		\$			\$
1906 (and previous)	156,000	23,400	1914	1,367,050	185,946
1907	511,838	102,388	1915	533,216	92,113
1908	112,264	14,828	1916	2,807,096	763,586
1909			1917	2,460,079	668,660
1910	286,000	36,431	1918	619,878	152,663
1911			1919	165,184	30,878
1912	1,772,660	289,670	1920	277,712	48,478
1913	1,843,530	281,489	1921-1926		
			Total	12,912,507	2,690,516

**Imports and Exports.**—Imports into Canada of manufactured copper were valued at \$6,752,068, a decrease of nearly a million dollars from the total for the preceding year.

During 1920 the value of copper in its various forms exported from Canada, reached \$15,877,306, a value that has never been surpassed. In 1926 the total exports of copper were valued at \$15,008,859, making an increase of some \$300,000 over the total for the previous year. The two major export items were “copper, blister” valued at upwards of 6 million dollars and “copper, contained in ore” which accounted for more than 7·8 million dollars.

Table 209.—Imports into Canada and Exports of Copper, 1924-1926

Item	1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Copper, in bars or rods, when imported by manufacturers of trolley, telegraph and telephone wires, electric wires and electric cables, for use only in the manufacture of such articles in their own factories.....	14,250,000	1,982,922	26,385,300	3,857,482	15,131,400	2,212,715
Copper, in bars or rods, in coil or otherwise, in lengths of not less than 6 feet, unmanufactured.....	757,000	143,322	482,500	95,563	2,627,900	490,222
Copper in blocks, pigs or ingots.....	12,083,131	1,591,958	7,934,779	1,138,740	8,599,699	1,231,422
Copper, old and scrap.....	1,896,200	246,632	4,174,100	572,656	3,039,400	408,999
Copper ore and concentrates.....			300	269	1,700	927
Copper, in strips, sheets or plates, not polished, planished or coated.....	1,861,900	380,431	1,971,300	400,229	1,882,400	406,988
Copper tubing in lengths of not less than 6 feet, and not polished, bent or otherwise manufactured.....	1,509,734	354,741	1,611,987	390,881	2,535,796	579,044
Copper wire, plain, tinned or plated.....	242,870	71,899	287,654	104,686	420,361	111,504
Copper wire cloth, or woven wire of copper.....		7,462		4,379		51,390
Copper wire, single or several, covered with cotton, linen, silk, rubber or other material, including cable so covered.....		296,221		487,779		502,395
Copper, all other manufactures of, n.o.p.....		420,611		415,625		578,068
Copper, precipitate of, crude.....				661		
Anodes of nickel, zinc, copper, silver or gold.....		5,288		4,084		4,896
Copper, sub-acetate of, or verdigris, dry..	683	201	4,083	812	31,755	2,260
Copper, sulphate of (blue vitriol).....	2,866,760	142,994	3,027,088	146,833	3,385,239	158,992
Copper bars for use in the manufacture of rods to be used in the manufacture of electrical conductors, and copper rods for such manufacture, units not exceeding the area of 7/8 gauge conductor.....	5,114,600	682,369	*	*	*	*
Copper, sulphate of, dehydrated, for agriculture or spraying purposes.....	243,088	11,027	156,808	7,662	229,228	11,896
Copper rollers adapted for use in calico printing.....						350
<b>Total.....</b>		<b>6,338,078</b>		<b>7,628,341</b>		<b>6,752,068</b>
<b>EXPORTS—</b>						
Copper, fine, contained in ore, matte, regulus, etc.....	49,545,800	5,346,489	60,527,500	6,969,960	67,108,300	7,822,260
Copper, blister.....	47,935,700	6,008,409	48,558,500	6,547,397	45,256,300	6,055,266
Copper, old and scrap.....	2,198,100	226,993	5,601,700	658,458	5,972,400	614,108
Copper, pig.....	2,405,800	284,780	1,100	126	58,200	7,127
Copper in bars, rods, strips, sheets, plates and tubing.....	170,400	39,500	156,300	45,599	256,900	72,475
Copper wire and cable.....		636,597		404,600		380,311
Copper manufactures n.o.p.....		56,116		59,792		57,312
<b>Total.....</b>		<b>12,598,884</b>		<b>14,685,932</b>		<b>15,008,859</b>

\* Included in the first item.

**Prices.**—According to the New York *Engineering and Mining Journal*, the average price of electrolytic copper for 1926 was 13·795 cents per pound as against 14·042 cents in 1925. Prices ranged from 13·822 cents per pound in January to 14·174 cents in August, the highest for the year, and back to 13·302 cents in December.

Table 210.—Monthly Average Prices of Copper, New York and London, 1924-1926

(From the *Engineering and Mining Journal*)

Month	Electrolytic copper					
	New York in cents per pound			London, £ Sterling per ton of 2,240 pounds		
	1924	1925	1926	1924	1925	1926
January.....	12.401	14.709	13.822	67.193	70.607	65.325
February.....	12.708	14.463	13.999	68.167	69.525	66.375
March.....	13.515	14.004	13.859	72.087	67.739	65.489
April.....	13.206	13.252	13.706	70.150	64.194	64.600
May.....	12.772	13.347	13.599	67.648	63.560	64.313
June.....	12.327	13.399	13.656	66.313	63.369	64.591
July.....	12.396	13.946	13.924	65.815	65.750	65.625
August.....	13.221	14.490	14.174	67.800	68.169	66.857
September.....	12.917	14.376	14.062	67.125	67.693	66.528
October.....	12.933	14.300	13.862	66.620	67.523	66.298
November.....	13.635	14.353	13.576	68.063	67.893	65.551
December.....	14.260	13.866	13.302	69.762	65.625	64.114
<b>Average.....</b>	<b>13.024</b>	<b>14.042</b>	<b>13.795</b>	<b>68.062</b>	<b>66.804</b>	<b>65.472</b>

Table 211.—\*World Production of Copper 1913 and 1922-1926

(From the *Year Book of the American Bureau of Metal Statistics*, 1922 and 1926.)

(Short tons)

Country	1913	1922	1923	1924	1925	1926
<b>NORTH AMERICA—</b>						
United States.....	614,255	511,970	754,000	819,000	854,000	878,000
Mexico.....	58,185	29,842	60,538	57,139	59,123	62,303
Canada (a).....	38,460	25,300	40,230	50,072	56,239	64,124
Cuba.....	3,747	11,788	11,963	12,742	13,128	13,034
<b>Total, North America.....</b>	<b>714,647</b>	<b>578,900</b>	<b>866,731</b>	<b>938,953</b>	<b>982,490</b>	<b>1,017,461</b>
<b>SOUTH AMERICA—</b>						
Bolivia.....	4,077	10,154	11,744	8,200	7,500	7,100
Chile.....	46,574	142,830	201,042	208,964	208,888	223,015
Peru.....	30,609	40,133	48,684	37,410	41,180	42,703
Venezuela.....		1,075	1,175	1,230	1,500	1,000
<b>Total, South America.....</b>	<b>81,260</b>	<b>194,192</b>	<b>262,645</b>	<b>255,804</b>	<b>259,065</b>	<b>273,818</b>
<b>EUROPE—</b>						
Austria-Hungary (b).....	4,518	5,050	5,327	4,242	3,665	4,099
France.....		3,199	6,204	2,568	3,769	3,858
Germany.....	27,881	19,841	20,282	25,132	24,251	23,810
Jugo-Slavia.....		5,756	7,536	8,978	8,048	10,692
Norway.....	3,021	10,598	8,816	10,913	13,779	13,779
Russia.....	37,358	2,205	2,205	3,637	7,251	13,228
Spain and Portugal.....	39,683	40,234	57,115	61,839	63,933	63,933
Sweden.....	4,645	67	5,180	3,086	2,500	2,300
Serbia.....	7,053					
<b>Total, Europe.....</b>	<b>124,159</b>	<b>86,950</b>	<b>112,665</b>	<b>120,395</b>	<b>127,196</b>	<b>135,699</b>
<b>ASIA—</b>						
Japan.....	73,283	59,663	65,417	69,507	72,413	72,277
Other Asia.....		1,162	810	2,315	3,600	5,100
<b>Total, Asia.....</b>	<b>73,283</b>	<b>60,825</b>	<b>66,227</b>	<b>71,822</b>	<b>76,013</b>	<b>77,377</b>
<b>Australasia.....</b>	<b>49,901</b>	<b>13,754</b>	<b>19,995</b>	<b>15,711</b>	<b>13,578</b>	<b>11,244</b>
<b>Africa.....</b>	<b>25,236</b>	<b>58,219</b>	<b>80,410</b>	<b>115,300</b>	<b>118,670</b>	<b>108,010</b>
<b>Other countries.....</b>	<b>4,188</b>	<b>3,307</b>	<b>3,307</b>	<b>4,409</b>	<b>4,409</b>	<b>4,409</b>
<b>Grand Total.....</b>	<b>1,072,674</b>	<b>996,147</b>	<b>1,411,980</b>	<b>1,522,394</b>	<b>1,581,424</b>	<b>1,628,018</b>

(\*) So far as possible, these statistics are based on blister copper, referred to countries wherein ore originated.

(a) For Dominion Bureau of Statistics figures on Canada's production of copper, see Table 204.

(b) After 1918, Austria only.

## METALS OF THE PLATINUM GROUP

**Production.**—Metals of the platinum group produced from Canadian ores in 1926 amounted in value to \$1,563,785 as compared with \$1,677,161 in 1925.

The 1926 production included 9,471 ounces of platinum valued at \$919,349 and 10,024 ounces of palladium, rhodium, iridium, etc., valued at \$640,178, all reported as being recovered in the refining of the nickel-copper matte from the Sudbury district, and 50 ounces of platinum valued at \$4,258 from British Columbia placers.

Canada stands third in the world's production of these metals, larger amounts coming from Russia, and Colombia, South America. In British Columbia, small quantities of platinum are found in placer deposits with alluvial gold and black sands; in Ontario these rare metals occur with the nickel-copper-sulphide ores of the Sudbury district. Copper-nickel matte containing the precious metals is made at Coniston by the Mond Nickel Company, Limited, and at Copper-cliff by the International Nickel Company, Limited. The Mond matte is shipped either to the United States, for manufacture into monel metal, or to Port Colborne, Ontario, for refining. When the copper and nickel are removed, the residues are further refined for the recovery of gold, silver, platinum and palladium and smaller amounts of rhodium and iridium.

Imports into Canada of platinum crucibles were valued at \$8,960 in 1926 as against \$39,685 in 1925. There were slight reductions in the volume of imports of platinum wire and bars, strips, sheets or plates, and in retorts, pans, condensers, etc., in 1926 as compared with 1925.

Exports, consisting of jewellers' sweepings, ores and concentrates, and old and scrap platinum, were slightly less in 1926 than in the previous year.

The average price of platinum in 1926 was \$113.269 per fine ounce as against \$119.093 in 1925. At the beginning of the year quotations were around \$118 in New York but this price gradually fell away until May when the average quotation for the month was \$109. Prices varied during the remaining months of the year between \$111 and \$116, the average quotation for December, 1926, being \$111.846.

Table 212.—Production of Platinum from Canadian Sources, 1925 and 1926

Source	1925		1926	
	Platinum	Palladium Rhodium, etc.	Platinum	Palladium, Rhodium, etc.
Produced by refineries in Canada or elsewhere, from Canadian mattes and residues.....	Fine oz. 8,692 Value \$ 1,027,477	8,288 648,969	9,471 919,349	10,024 640,178
British Columbia placers.....	Fine oz. 6 Value \$ 715	..... .....	50 4,258	..... .....
<b>Canada.....</b>	<b>Fine oz. 8,698 Value \$ 1,028,192</b>	<b>8,288 648,969</b>	<b>9,521 923,607</b>	<b>10,024 640,178</b>

Table 213.—Production of Platinum in Canada from Alluvial Sands, 1887-1926

Year	Value	Year	Fine ounces	Value	Year	Fine ounces	Value
	\$			\$			\$
1887.....	5,600	1899.....		825	1915.....	23	1,063
1888.....	6,000	1900.....			1916.....	15	600
1889.....	3,500	1901.....		457	1917.....	57	3,823
1890.....	4,500	1902.....		190	1918.....	39	2,506
1891.....	10,000	1903.....			1919.....	25	2,105
1892.....	3,500	1904.....		420	1920.....	17	791
1893.....	1,800	1905.....		500	1921.....	23	1,558
1894.....	950	1906.....			1922.....	12	1,154
1895.....	3,800	1907-1912.....			1923.....	7	816
1896.....	750	1913.....	18	489	1924.....	5	569
1897.....	1,600	1914.....			1925.....	6	715
1898.....	1,500				1926.....	50	4,258
Total.....							66,339

Table 214.—Recovery of Precious Metals at the International Nickel Company's Works\*—New Jersey, U.S.A., 1907-1922

Year	Matte treated	Gold	Silver	Platinum	Palladium	Rhodium	Others
	Tons	Ounces	Ounces	Ounces	Ounces	Ounces	Ounces
1907.....	17.840	993.572	63,400.70	226.800	607.300	(a)	
1908.....	18.839	5,238.181	129,329.29	172.316	328.287	(a)	
1909.....	18.407	2,113.669	63,138.66	546.627	1,270.598	(a)	
1910.....	24.309	2,649.799	60,256.83	258.325	522.804	(a)	
1911.....	26.840	2,203.052	70,954.38	655.552	753.363	(a)	
1912.....	27.652	2,476.558	62,169.66	496.850	680.130	(a)	
1913.....	38.733	2,336.405	77,924.03	192.863	207.713	191.067	
1914.....	40.267	2,695.957	75,928.18	748.440	756.360	515.801	
1915.....	31.428	3,444.785	101,793.17	452.430	543.240	57.475	
1916.....	56.405	3,495.123	110,285.21	1,016.581	1,344.915	257.070	
1917.....	59.209	1,954.934	92,963.67	970.695	1,354.459	325.407	
1918.....	62.250	1,968.703	107,076.78	649.737	786.654	472.579	
1919.....	19.528	634.043	35,689.79	616.716	762.217	227.294	(b) 76.613
1920.....	30.740	613.338	81,882.78	488.901	739.158	390.336	(b) 102.363
1921.....	(c) 2,217.000	6.901	1,242.74	281.582	382.626	256.110	(b) 10.655
1922.....	(c) 3,112.000	206.542	12,211.66	137.882	300.839	103.874	(b) 20.563

\*Plant dismantled during 1922.

(a) Figures not given separately.

(b) Includes Osmium, Iridium and Ruthenium.

(c) These quantities bear no relation to the amounts of precious metals recovered.

Platinum is recovered in a small way at the Royal Mint in the form of platinum black, a dull black powder of metallic platinum, obtained from the treatment of dental and old jewellery scrap. The following table shows the recoveries since 1922.

Table 215.—Recovery of Platinum Black, at the Royal Mint, Ottawa, 1922-1926

Year	Platinum	
	Oz. gross	Value
1922.....	12.386	\$ 1,102.35
1923.....	4.520	393.47
1924.....	16.186	1,408.99
1925.....	9.500	*
1926.....	10.700	*

\*No sales.

Table 216.—Imports into Canada and Exports of Platinum, 1924-1926

	1924		1925		1926	
	Ounces	Value	Ounces	Value	Ounces	Value
		\$		\$		\$
<b>IMPORTS—</b>						
Crucibles.....		11,567		39,685		8,960
Wire and bars, strips, sheets or plates.....		167,225		157,914		138,433
Retorts, pans, condensers, etc.....		579		41,006		40,028
<b>Total.....</b>		<b>179,371</b>		<b>238,605</b>		<b>187,421</b>
<b>EXPORTS—</b>						
Jewellers' sweepings.....		344,074		322,295		326,007
Ores and concentrates.....	467	47,723	404	42,489	520	54,747
Old and scrap.....	237	24,372	655	76,423	396	40,185
<b>Total.....</b>		<b>416,169</b>		<b>441,207</b>		<b>420,939</b>

Table 217.—Monthly Average Prices of Platinum, 1924-1926

From *The Engineering and Mining Journal*, 1926

(In dollars per fine ounce)

Month	1924	1925	1926
	\$	\$	\$
January.....	122-115	117-000	118-200
February.....	124-739	117-000	113-909
March.....	121-692	117-000	112-000
April.....	115-577	118-269	111-538
May.....	115-731	119-850	108-960
June.....	116-000	120-000	111-000
July.....	118-231	120-0 0	114-692
August.....	120-000	120-060	116-000
September.....	118-923	120-000	116-840
October.....	118-000	120-000	112-240
November.....	117-792	120-000	112-000
December.....	117-000	120-000	111-846
<b>Average.....</b>	<b>118-817</b>	<b>119-093</b>	<b>113-269</b>

Table 218.—Platinum Metals Consumed in the United States as Reported by Refiners and by Industries, 1925-1926

From *Mineral Resources of the United States*, 1926.

(In Troy ounces)

Industry	Platinum	Iridium	Palladium	Others	Total	Percentage of total
<b>1925</b>						
Chemical.....	12,558	71	383	685	13,697	7-75
Electrical.....	18,845	1,579	3,157	111	23,692	13-40
Dental.....	9,293	95	14,952		21,340	13-78
Jewellery.....	93,293	2,840	10,950	2,280	109,363	61-95
Miscellaneous.....	3,356	220	520	1,414	5,510	3-12
<b>Total.....</b>	<b>137,345</b>	<b>4,805</b>	<b>29,962</b>	<b>4,490</b>	<b>176,602</b>	<b>100-00</b>
<b>1926</b>						
Chemical.....	10,253	145	213	228	10,839	6
Electrical.....	16,765	1,608	3,508	185	22,066	13
Dental.....	8,542	131	11,063		19,736	11
Jewellery.....	85,908	2,949	7,770	454	97,081	57
Miscellaneous.....	17,381	581	2,181	1,751	21,894	13
<b>Total.....</b>	<b>138,849</b>	<b>5,414</b>	<b>24,735</b>	<b>2,618</b>	<b>171,616</b>	<b>100</b>

Table 219.—World Production of Platinum, 1912-1926

(In troy ounces, fine platinum)

(From *The Mineral Industry* 1926)

Year	Australia	Canada (b)	Colombia	Russia	South Africa	United States	Total
1912.....	463	497 (d)	27,071 (c)	250,000 .....		1,005	<b>279,036</b>
1913.....	335	311 (d)	17,635 (c)	210,000 .....		1,034	<b>229,315</b>
1914.....	185	..... (d)	16,264 (c)	202,000 .....		1,484	<b>219,333</b>
1915.....	43	475 (d)	18,749 (c)	104,000 .....	(e)	1,190	<b>124,457</b>
1916.....	62	1,040 (d)	25,592 (c)	53,000 .....	(e)	2,780	<b>82,474</b>
1917.....	197	1,036 (d)	26,421 (c)	98,474 .....	(e)	6,280	<b>132,408</b>
1918.....	461	705 (d)	34,266	43,181 .....	(e)	9,740	<b>88,353</b>
1919.....	162	690 (d)	32,236	39,425 .....	(e)	10,460	<b>82,973</b>
1920.....	640	4,345 (c)	33,500	11,323 .....	(e)	11,500	<b>61,308</b>
1921.....	189	5,412 (c)	34,000	5,500 .....		2,899	<b>48,000</b>
1922.....	61	4,802 (d)	43,574	22,500 .....		1,998	<b>72,935</b>
1923.....	445	6,810 (d)	40,676	30,000 .....		2,114	<b>80,045</b>
1924.....	490	9,186 (d)	46,533	40,000 .....		3,523	<b>99,732</b>
1925.....	436	8,698 (e)	45,000 (e)	40,000 .....		4,325 (e)	<b>100,000</b>
1926.....	.....	9,521 (e)	50,000	73,980	4,951	4,923 (e)	<b>140,009</b>

(a) Estimated content of fine platinum contained in crude platinum output. There has been a small production in some years from India, Borneo, Japan and other countries, but none of importance.

(b) Platinum of domestic source recovered by refiners.

(c) Estimated by J. M. Hill, U.S. Bureau of Mines.

(d) Exports.

(e) Estimated.

## CHAPTER SIX

## MISCELLANEOUS METAL MINING INDUSTRIES IN CANADA

Including General Statistics Relating to the industries in this Group and Commodity Statistics, Showing Production by Provinces, Imports, Exports, Prices and World Output Tables on Aluminium, Antimony, Chromite, Iron Ore, Pig Iron, Steel and Rolled Products, Manganese, Mercury, Molybdenum and Tin

## 1. General Review.

Several metallic minerals, produced in each case by a single operator, or perhaps by a few operators only, have been grouped in this report for consideration as a single industry. There is little that can be said in a general way about these various producers. Iron and steel, and aluminium are products of large, well-organized concerns, but both of these products are made in Canada solely from imported ores. Aluminium smelting is, therefore, of interest to the mining industry wholly because of the processes employed in the reduction of the metal from bauxite ore. Iron ore is found in Canada in very extensive deposits, but as the grade available cannot be economically used without beneficiation, very little Canadian ore has been mined in recent years. Imported iron ore used in Ontario is mostly from the Mesabi range Minnesota, U.S.A., while in the Maritime provinces, Wabana ore, mined on Bell Island, Newfoundland, is chiefly used.

Other metallic mineral industries reviewed in this chapter, include the production of antimony, chromite, manganese and mercury but these enterprises are relatively small, and their importance is largely determined by the extent of available supplies from other countries. When, as during the great war, production from other sources was insufficient to meet the increased demands for such products as chromite and manganese, the output from Canadian deposits found ready markets. At other times, with larger supplies available, from various sources, operation of the Canadian properties has been found somewhat difficult because of the keen competition of other producers.

During the great war, some of these smaller industries attained very considerable importance, and it is always possible, that some commercial development may occur that will lead once again, to appreciable expansion in these somewhat neglected fields.

For historical purposes and to provide the interested reader with the available data, tables have been prepared for this report that set out the known facts regarding production in these industries.

In 1926 the miscellaneous group included only one iron ore mine and one molybdenite property. In these there was invested \$87,588 in lands, buildings, supplies on hand, etc. Twenty-five men were employed and salaries and wages totalled \$10,626. Fuel and electricity cost \$3,844 and the products sold returned \$11,072 to the operators. In 1925 this group included one iron mine, one molybdenite mine, and one cinnabar prospect. The capital employed amounted to \$109,583 and wages paid to 33 men amounted to \$17,301; fuel and electricity used during the year cost \$2,007 and products sold were valued at \$23,110.

Table 220.—Principal Statistics in the Miscellaneous Metal Mining Industries in Canada, 1922-1926

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages paid	Miscellaneous expenses	Cost of fuel and electricity	Net value of ore, concentrates, etc. shipped by mines
			\$		\$	\$	\$	\$
1922.....			5,479,766					56,993
1923 (a).....	6	6	5,504,796	42	34,687	10,026	2,257	168,994
1924 (b).....	4	4	5,000	42	16,436	990	4,010	17,394
1925 (c).....	3	3	109,583	33	17,301	*	2,007	23,110
1926 (d).....	2	2	87,588	25	10,626	*	3,844	11,072

- (a) Includes data for 3 iron mines, 1 chromite mine and 2 manganese mines.  
 (b) Includes data for 2 iron mines, 1 molybdenite mine and 1 manganese mine.  
 (c) Includes data for 1 iron mine, 1 molybdenite mine and 1 cinnabar prospect.  
 (d) Includes data for 1 iron mine and 1 molybdenite mine.  
 \*Data not available.

Table 221.—Capital Employed in the Miscellaneous Metal Mining Industries in Canada, 1925 and 1926

Industry	1925	1926
	\$	\$
Iron ore.....		
Molybdenite.....	84,583	87,588
Cinnabar.....	25,000	
<b>Total.....</b>	<b>109,583</b>	<b>87,588</b>

Table 222.—Employees, Salaries and Wages in the Miscellaneous Metal Mining Industries in Canada, 1925 and 1926

	1925			1926		
	Number of employees		Salaries and wages	Number of employees		Salaries and wages
	Male	Female	\$	Male	Female	\$
<b>SALARIED EMPLOYEES—</b>						
<b>Total.....</b>	4	1	4,500	2		2,455
<b>WAGE-EARNERS—</b>						
Surface.....	18	}	12,801	18	}	8,171
Underground.....	10			5		
<b>Total.....</b>	28		12,801	23		8,171
<b>Total.....</b>	32	1	17,301	25		10,626

**Table 223.—Number of Wage-Earners in the Miscellaneous Metal Mining Industries in Canada, by month, 1925 and 1926**

	1925				1926			
	Number of wage-earners				Number of wage-earners			
	Surface	Under-ground	Mill	Total	Surface	Under-ground	Mill	Total
January.....	9	3	7	19				
February.....	1	4		5				
March.....	9	12		21			4	4
April.....	7	10	7	24				
May.....	7	11	5	23			5	13
June.....	6	4		15		8		13
July.....	13	11	6	30	12	5		22
August.....	12	10	5	27	12		5	22
September.....	6	3	4	13	10		5	15
October.....	14	9	5	28	8		5	13
November.....	9	4	5	18	7		5	12
December.....	1	3	4	8				

**Table 224.—Fuel and Electricity Used in the Miscellaneous Metal Mining Industries in Canada, 1925 and 1926**

Kind	Unit of measure	1925		1926	
		Quantity	Value	Quantity	Value
		No.	\$	No.	\$
Bituminous coal.....	Tons			40	400
Electric power.....	k.w.h.	143,600	2,007	216,000	3,444
<b>Total.....</b>			<b>2,007</b>		<b>3,844</b>

**Table 225.—Power Employed in the Miscellaneous Metal Mining Industries in Canada, 1925 and 1926**

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers rating	Number of units	Total h.p. according to manufacturers rating
Electric motors— Operated by purchased power—Total.....	12	123	12	123

## 2.—Commodity Statistics on Aluminium, Antimony, Chromite, Iron Ore, Manganese, Mercury, Molybdenum, and Tin.

### ALUMINIUM

While, so far, no commercial ores of aluminium have been discovered in Canada, production of aluminium from imported ores, mostly mined in the United States, has been carried on in Canada at Shawinigan Falls, Quebec, since 1903, and in 1926 a new plant was built at Arvida near Lake St. John on the upper reaches of the Saguenay to increase the output of this metal by the only Canadian producer, the Aluminium Company of Canada. Both plants still use bauxite from the United States but it is expected that the Arvida plant, because of its accessibility to tide-water, will be able to bring in its raw material more cheaply by water from British Guiana than is now possible by rail, from United States mines.

As there is only one producing company in this industry, statistics regarding the smelting operations have been included with data supplied by the smelters producing non-ferrous metals

from Canadian ores. Production of aluminium hollowware, such as kitchen utensils, and other fabricated products, is reviewed annually in the Bureau's report on the *Manufactures of the Non-Ferrous Metals*.

Aluminium is a product of the electric furnace. Alumina, which has previously been recovered by chemical means from bauxite, is dissolved in molten cryolite, obtained from Greenland, in the electric furnace and a low voltage current is passed through the melt to decompose the oxide into metallic aluminium and oxygen; the metal sinks to the bottom of the crucible. The free oxygen attacks the carbon of the furnace electrode forming carbon dioxide gas and for this reason the electrode consumption is high. Theoretically, there should be no loss of cryolite but in actual operations losses occur, which must be made good from time to time. The chief uses of aluminium are in the manufacture of alloys with other metals including copper, nickel, cobalt, iron, antimony, tin, zinc and magnesium, and there are many uses for the pure metal itself. Pure aluminium powder is used in the thermit process to reduce the oxides of certain metals to the metallic state. In the manufacture of some alloys, metals of low carbon content are required and in the preparation of these metals from their oxides, reduction by aluminium is found very desirable, and a great improvement over the older method of reduction by carbon. Powdered aluminium is also used in precipitation of gold and silver from cyanide solutions and because of its great affinity for oxygen, it is sometimes employed as a de-gasifier or a de-oxidizer in the manufacture of steel.

Table 226.—Imports of Aluminium and its Products into Canada and Exports of Aluminium, 1924-1926

	1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
IMPORTS—						
Alumina.....	128,695,000	2,375,346	127,505,400	2,627,281	145,145,500	3,118,205
Cryolite ore.....	1,142,200	70,563	1,507,600	94,624	6,400,900	369,688
Aluminium—						
Ingots, blooms, bars.....	653,656	183,110	692,426	217,885	962,417	270,517
Tubing.....	47,247	27,064	82,086	45,409	76,113	42,003
Manufactures, n.o.p.....		485,037		519,653		598,790
Leaf foil.....		135,316		202,823		202,517
Household and hollow-ware.....		403,613		342,116		268,268
Total.....		3,689,049		4,049,791		4,870,018
EXPORTS—						
Aluminium—						
Ingots, bars, etc.....	18,146,700	3,990,857	27,267,800	6,558,910	25,177,000	5,900,547
Manufactures.....		767,430		793,170		1,188,260
Total.....		4,758,287		7,352,080		7,088,807

Table 227.—Monthly Average Prices of Ingot Aluminium, 1923-1926

(At New York in cents per pound)

Month	1923	1924	1925	1926
January.....	23-00	28-00	28-00	28-25
February.....	23-37	28-00	28-00	28-00
March.....	25-12	28-00	28-00	28-00
April.....	27-00	28-50	28-00	28-00
May.....	27-00	28-50	28-00	28-00
June.....	27-00	28-50	28-00	28-00
July.....	26-50	28-50	28-00	28-00
August.....	26-50	28-00	28-00	27-50
September.....	26-30	28-00	28-00	27-00
October.....	26-50	28-00	28-00	27-00
November.....	26-50	28-00	29-00	27-00
December.....	27-00	28-00	29-00	27-00
Average.....	25-98	28-17	28-17	27-65

Table 228.—World Production of Aluminium, 1913 and 1922-1926

(From *The Mineral Industry*, 1926)\*

(Metric tons)

Country	1913	1922	1923	1924	1925	1926
Austria.....	5,000	4,000	4,000	3,000	4,000	2,700
Canada.....	5,916	9,000	16,500	16,000	17,000	18,000
France.....	13,503	7,494	14,343	16,315	20,500	21,000
Germany.....	800	12,000	15,900	18,400	25,000	30,000
Great Britain.....	10,000	9,500	9,000	8,000	9,500	7,000
Italy.....	874	810	1,473	2,058	1,880	1,800
Norway.....	2,500	6,000	13,319	19,948	21,298	22,000
Switzerland.....	10,000	12,000	12,000	19,000	20,000	20,000
United States.....	29,500	52,000	95,000	85,000	93,000	91,000
<b>Total.....</b>	<b>78,093</b>	<b>112,804</b>	<b>181,535</b>	<b>187,721</b>	<b>212,178</b>	<b>213,500</b>

(\* The data in this table are as estimated by Robt. J. Anderson.

Table 229.—World Production of Bauxite, 1913 and 1922-1926

(From *The Mineral Industry*, 1926)

(Metric tons)

Country	1913	1922	1923	1924	1925	1926
Austria.....		4,095	2,734	(b) 3,000	(b) 4,000	(b) 5,000
British Guiana.....		(f) 4,998	135,712	188,071	197,458	187,000
British India.....	1,203	4,998	6,652	23,602	10,232	(c)
Dutch Guiana.....		18,805	15,839	60,025	85,501	100,000
France.....	309,285	236,141	393,628	335,489	406,421	408,600
Germany.....		15,146	6,662	3,084	1,767	(b) 15,000
Hungary.....		(c)	(c)	(c)	(c)	(c)
Italy (e).....	6,953	66,646	98,055	140,750	198,000	(c)
Jugo-Slavia.....		31,290	32,631	(b) 30,000	79,010	(b) 160,000
Rumania.....		3,737	4,162		7,000	(c)
Spain.....						
Ireland.....	(g) 8,417	5,953	3,504	5,241	5,120	(b) 6,000
United States.....	213,675	314,569	531,079	352,117	321,622	398,546
<b>Total.....</b>	<b>539,533</b>	<b>701,380</b>	<b>1,230,658</b>	<b>1,141,379</b>	<b>1,316,131</b>	<b>1,280,146</b>

(a) No record of any production prior to 1920 for lower Austria; output of Dalmatia and Istria prior to 1919 are given under Austria in most statistical tables (cf. previous volumes of the *Mineral Industry*.) Starting with 1920, figures for Dalmatia are given under Jugo Slavia, and those for Istria under Italy. (b) Estimated. (c) Data not available. (d) The bauxite deposits in the Bihar Mountains in Rumania were not exploited until war when they were owned by Hungary. (e) Istria included under Italy. (f) The bauxite mines were closed early in 1921, and operations did not begin again until late in 1922. Shipment of 20,010 tons was made from stocks in 1921 and no shipments made in 1922. (g) Given as production from United Kingdom.

## ANTIMONY

**Production**—(No antimony ore has been produced in Canada since 1917). Ores of antimony are known to occur in British Columbia, New Brunswick, Nova Scotia, Ontario, Quebec and the Yukon. The greater part of the Canadian output of refined antimony was produced in the years 1907, 1909, 1915 and 1916 by the Consolidated Mining and Smelting Company of Trail, B.C., as a by-product in the treatment of silver-lead ores. The remainder was from the New Brunswick ores treated locally.

Production of antimony in 1926 amounted to 1,596 pounds worth \$281 as compared with 1,751 pounds valued at \$206 in 1925. In both years the antimony was contained in export shipments of silver-lead-bismuth bullion obtained in the treatment of ores from the Cobalt district.

There is an occurrence of stibnite ore and native antimony associated with arsenopyrite, pyrite and galena that was worked at West Gore, Hants county, Nova Scotia, during the war period, the ore being concentrated at the mine to a 38 to 45 per cent antimony content.

About 1850, stibnite and small quantities of native antimony were discovered in the slates and quartzites of Prince William, York county, New Brunswick. Attempts to smelt the ore locally failed, and for a time, the crude ore was shipped but this proved unprofitable and work was discontinued in 1890. In 1907 the deposit was re-worked and during the war period the ore was smelted and refined near lake George.

Antimony ores are rare in the province of Ontario, although it has been found in Hastings, Addington and Frontenac counties and with the silver of the Cobalt district. In South Ham, Wolfe county, Quebec, some work has been done on an antimony deposit.

There are several deposits of antimony in British Columbia. In the Bridge river area, Lillooet Mining Division, stibnite occurs in quartz. The ore contains, on the average, 40 to 60 per cent antimony, free from arsenic, zinc and lead; it also carries gold in amount from a trace to one-half an ounce to the ton. A few shipments have been made from a deposit on the north fork of Carpenter creek in the Slocan district.

Antimony has also been found on Graham island, at Tatlayoko lake, Nanaimo district, and in the vicinity of Kamloops lake where it is associated with cinnabar.

In the Yukon territory antimony ores occur on the Carbon and Chieftain Hills near the Wheaton river.

Table 230.—Production of Antimony in Canada, 1886-1926

Year	Antimony ore		Refined regulus	
	Tons	Value	Pounds	Value
		\$		\$
1886.....	665	31,490		
1887.....	584	10,860		
1888.....	345	3,696		
1889.....	55	1,100		
1890.....	26½	625		
1891.....	10	60		
1892-1897.....				
1898.....	1,344	20,000		
1899-1904.....				
1905 (a).....	527			
1906 (a).....	782			
1907.....	2,016	65,000	63,850	5,108
1908 (b).....	148	5,443		
1909.....	35	1,575	61,207	4,285
1910.....	364	13,906		
1911-1914.....				
1915.....	1,341	81,283	59,440	11,888
1916.....	885	94,537	107,185	41,823
1917.....	361	22,000		
1918-1926*.....				

(a) As recorded by the Nova Scotia Department of Mines: no value given.  
(b) Exports.

\* For 1925 and 1926, see text.

Table 231.—Imports of Antimony into Canada, 1924-1926

	1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
Antimony, or regulus of.....	780,271	70,982	897,298	124,394	1,139,748	183,127
Antimony salts.....	16,412	3,408	36,263	6,838	31,056	6,697
<b>Total.....</b>	<b>796,683</b>	<b>74,390</b>	<b>933,561</b>	<b>131,232</b>	<b>1,170,804</b>	<b>189,824</b>

Table 232.—Monthly Average Prices of Antimony, 1924-1926

(Compiled from quotations given in the *Engineering and Mining Journal*—"Ordinaries" stand for Hungarian, Chinese or other "Foreign" brands)

(At New York in cents per pound)

Month	1924	1925	1926
	Ordinaries	Ordinaries	Ordinaries
January.....	10-279	17-428	23-490
February.....	10-935	19-795	21-676
March.....	11-442	15-553	19-708
April.....	9-952	12-553	17-462
May.....	8-755	15-770	12-170
June.....	8-403	16-500	11-106
July.....	8-477	17-779	14-490
August.....	9-839	17-683	15-957
September.....	11-022	17-143	15-325
October.....	11-519	18-029	13-943
November.....	14-385	20-000	13-385
December.....	15-024	21-692	13-142
Average.....	10-836	17-494	15-988

**World Production of Antimony.**—China is by far the greatest antimony-producing country in the world, and as consumption of antimony in that country is only 1 per cent of its production, large quantities are available for export. In 1926 exports amounted to 28,848 metric tons of antimony shipped in the form of regulis, crude ore or oxide. There are many valuable deposits in the various provinces of China, but in the province of Hunan alone there is said to be 2,000,000 tons, much of which has not been developed.

Table 233.—World's Production of Antimony, 1913 and 1920-1926

(From *The Mineral Industry*, 1926)

(Metric tons, antimony content of metal, crude, oxide, or ore)

Country	1913	1920	1921	1922	1923	1924	1925	1926
United States.....	-	-	-	4	9	33	33	24
Canada.....	-	-	-	-	-	-	-	1
Mexico.....	2,340	1,572	45	457	490	775	1,399	1,200
Bolivia (a).....	30	588	336	185	312	751	1,850	1,568
Peru.....	-	6	7	-	-	-	-	-
Hungary.....	-	314	-	67	643	348	400	422
Austria.....	1,038	-	-	172	-	-	-	-
Austria-Hungary.....	840	-	-	-	-	-	-	-
Germany.....	-	644	-	-	-	-	-	56
France.....	5,170	1,413	1,118	814	864	873	795	910
Italy.....	360	187	40	183	271	465	390	30
Portugal.....	10	-	-	-	-	-	-	-
Spain.....	-	-	-	-	41	-	-	-
Jugo-Slavia.....	-	-	-	-	131	414	350	275
Serbia.....	250	(a) 831	600	150	-	-	-	-
Algeria (a).....	186	1,000	103	530	500	236	880	840
British South Africa.....	30	73	-	1	-	-	18	30
China (a).....	13,032	13,109	14,752	14,316	14,244	(b) 13,168	19,040	28,848
Japan.....	20	-	-	-	-	-	-	-
India.....	-	-	1	-	-	-	-	-
Indo-China.....	-	-	-	-	-	-	50	-
Asia Minor.....	240	400	400	400	400	400	400	400
Victoria.....	960	375	150	730	527	163	97	-
New South Wales.....	10	64	40	-	-	-	-	-
Queensland.....	-	-	-	-	-	-	-	10
Western Australia.....	-	3	-	-	-	-	-	-
<b>Total.....</b>	<b>24,516</b>	<b>20,579</b>	<b>17,592</b>	<b>18,019</b>	<b>18,432</b>	<b>17,626</b>	<b>25,703</b>	<b>34,614</b>

(a) Exports

(b) Statistics of Hunan Antimony Association

## CHROMITE

There has been no production of chromite in Canada since 1923 when 3,558 tons valued at \$52,650 were produced.

The mineral chromite ( $\text{FeO}$ ,  $\text{Cr}_2\text{O}_3$ ) is the commercial source of the metal chromium, which is of prime importance in the manufacture of chrome steel armour plate and other similar steels. Chromium is a necessary constituent of many high-speed cutting tools, and, in the manufacture of stainless steels, where it makes up from 12 to 14 per cent of the alloy, its use is well established.

Quebec has been the main source of chromite ore in Canada. Rhodesia, India, and New Caledonia, supply over 90 per cent of the world's chromite.

During the war when the higher grades of ore from other continents were not easily obtainable, many low-grade deposits in Canada and the United States were opened up, and for a time considerable metallurgical research was done in Canada on the reduction of chromium-bearing ores. Chromium metal may be obtained from chromium oxide by reduction with aluminium. The metal made in this manner is very pure and free from carbon. In less pure form, it has been made in the electric furnace directly from the ore. The resultant product made in this manner contains small percentages of iron and carbon but not enough to cause any serious trouble when the metal is used in alloys with other metals. Ferrochrome, also a product of the electric furnace, is made from a good grade of chromite ore, and the iron chromite alloy runs about 60 to 70 per cent chromium. This alloy can then be added in the required amounts to a bath of molten steel. Ferrochrome requirements take about 40 per cent of the world's supply of chromite; about 35 per cent of the chromite produced is used in the manufacture of chromite refractories such as brick and other furnace linings, and 25 per cent is used in the manufacture of chemicals.

Considerable research on the plating of chromium has resulted in much success. Because it does not tarnish readily and as chromium plate has a brilliant blue-white lustre, the use of chromium as a plating material has been greatly extended in recent years.

Table 234.—Production of Chromite in Canada, 1886-1926

Year	Short tons	Value	Year	Short tons	Value
		\$			\$
1886.....	60	945	1909.....	2,470	26,604
1887.....	38	570	1910.....	299	3,734
1888-93.....			1911.....	157	2,587
1894.....	1,000	20,000	1912-13.....		
1895.....	3,177	41,300	1914.....	136	1,210
1896.....	2,342	27,004	1915.....	(a) 12,341	179,543
1897.....	2,637	32,474	1916.....	(a) 27,517	311,460
1898.....	2,021	24,252	1917.....	(a) 36,725	499,682
1899.....	2,010	21,842	1918.....	21,994	867,122
1900.....	2,335	27,000	1919.....	8,541	228,898
1901.....	1,274	16,744	1920.....	11,016	251,379
1902.....	900	13,000	1921.....	2,798	55,696
1903.....	3,509	51,129	1922.....	767	11,503
1904.....	6,074	67,148	1923.....	3,558	52,650
1905.....	8,575	93,301	1924.....		
1906.....	9,035	91,859	1925.....		
1907.....	7,196	72,901	1926.....		
1908.....	7,225	82,008			
			<b>Total.....</b>	<b>187,727</b>	<b>3,175,543</b>

(a) A portion of this ore was sold to a customs mill in the district and the final shipments of ores and concentrates in 1916 were 15,249 short tons valued at \$310,902 or an average of \$20.39 per ton; and 23,713 tons valued at \$581,796 or an average of \$24.54 per ton in 1917.

Table 235.—Production in Canada, and Imports of Chromite, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Quebec—Chromite.....						
IMPORTS—						
Bichromate of soda.....	877	126,670	816	107,035	892	109,514
Bichromate of potash.....	128	22,661	26	4,826	72	10,764

Table 236.—World Production of Chrome Ore, 1913 and 1920-1926 (a)

(From *The Mineral Industry, 1926*)

(Metric tons)

Country	1913	1920	1921	1922	1923	1924	1925
Brazil (b).....		3,506					
Bosnia (c).....	305			16		305	12,158
Canada.....		9,996	2,538	696	3,228		
Cuba.....		721	610	1	10,587	8,276	11,841
Greece.....	6,342	7,382	8,029	9,213	14,828	14,327	
Guatemala (b).....		1,122	401				
India.....	5,670	27,232	35,322	23,144	55,115	46,194	38,053
Japan.....		2,967	3,368	3,756	4,528	5,376	5,815
New Caledonia (b).....	63,370	91,536	29,458	10,718	23,226	15,292	18,501
Queensland.....		161					
Rhodesia.....		54,674	45,533	84,799	87,702	156,692	123,222
Russia.....	63,384	2,360	2,220	292	(d) 970	(d) 5,138	
Turkey.....	26,374	25,000	(c) 10,000	2,540			
Union of South Africa.....			1,078	87		4,572	11,316
United States.....	259	2,542	256	361	231	237	110

(a) From the official reports of the respective countries. (b) Exports. (c) Estimated in part. (d) Fiscal years ending Oct. 1. (e) Jugo-Slavia after 1919.

## IRON ORE

**Production.**—Iron ore was first discovered in Canada in the St. Maurice valley, Quebec, as early as 1667, or perhaps before that. Count Frontenac mined some ore there five years later and the samples, tested in France, were found to be of workable quality.

In 1730 M. Franchville was granted a licence by Louis XIV of France together with a subsidy of 10,000 'livres' to work the St. Maurice iron mines. The project contemplated the construction of a blast furnace which apparently was not successful for, in 1735, he surrendered his rights to the government. Some years later another licence and a subsidy were given La Compagnie des Forges which made not only the iron kettles that were needed by the pioneers for making sugar and soap but furnished the French government with cannon for military enterprises. In 1743 the plant again reverted to the government and was operated by the government until the country passed into the hands of the British.

Nova Scotia with its large iron and steel industry is not at present a producer of iron ore. Deposits of iron ore of various kinds are numerous throughout a large part of the province, which ranks next to Ontario in the matter of total production, but the large deposits of high-grade iron ore in Newfoundland owned and operated by the British Empire Steel Corporation, are much more readily accessible and of a higher and more constant grade than the deposits in Nova Scotia and for that reason the local deposits are not now being worked.

In the early days iron ore mining and smelting were carried on to a small extent in New Brunswick but the ore was low-grade and the operations did not prosper for long.

Iron ore was first mined and smelted in the province of Quebec early in the eighteenth century, and from that time until 1883 the industry was carried on almost continuously at Three Rivers in the St. Maurice district. Other furnaces using local ore were operated at Radnor Forges and at Drummondville, the last to shut down being the Drummondville furnace in 1911. The ores used were bog ores, with charcoal for fuel. The output of all the furnaces was small and the industry derived its chief importance from the superior quality of the pig iron made.

Furnaces have also been built at various times and places in attempts to smelt some of the other classes of ore found in the province, but all were short lived, and none of them achieved commercial success.

More iron ore has been produced in Ontario than in any other province to date but at the present time no properties are producing. About 1896 a system of bounties, inaugurated by the Federal and Provincial Governments to encourage the manufacture of iron and steel from native ores, had the desired effect of stimulating the industry and the following year, blast furnaces were erected at various points in the province. Strenuous efforts were made to use Ontario ores as far as possible and thus obtain advantages of the bounties offered.

As a result, iron mining and prospecting for iron ore were stimulated but the grade found was generally low and contained deleterious material to such an extent that it was soon found unprofitable to operate.

In northwestern Ontario about 1899, a deposit of hematite that later developed into the Helen mine, was found and this mine was the main source of Ontario's output for a number of years. It is now worked out and closed down. Ontario has a large supply of low-grade iron ore, but beneficiation processes must be applied to make these ores suitable for commercial use.

Production of iron ore in British Columbia has been almost negligible up to the present time, but the small production has not been caused so much by the lack of ore as by the lack of a market for the ore. Different varieties of iron ore are found in various parts of the province, the most important of which are the magnetite deposits which occur on the islands along the coast. In some deposits the sulphur content is high, which would necessitate a preliminary roasting before charging to the blast furnaces, but the ores are easily mined, are close to tide-water and would supply for some years a small iron-smelting industry if the local demand for the products would justify its establishment.

Table 237.—Shipments of Iron Ore from Canadian Mines, by Provinces, 1886-1926

(Short tons)

Year	Nova Scotia	New Brunswick	Quebec	Ontario	British Columbia	Canada
1886	44,388			16,032	3,941	64,361
1887	43,532		13,404	16,598	2,796	76,330
1888	42,611		10,710	16,894	8,372	78,587
1889	54,161		14,533		15,487	84,181
1890	49,206		22,305	5,000		76,511
1891	53,649		14,380		950	68,979
1892	78,258		22,690		2,300	103,248
1893	102,201		22,076		1,325	125,602
1894	89,379		19,492		1,120	109,991
1895	83,792		17,783		1,222	102,797
1896	58,810		17,630	15,270	196	91,906
1897	23,400		22,436	2,770	2,099	56,705
1898	19,079		17,873	21,111	280	58,343
1899	28,000		19,420	25,126	2,071	74,617
1900	18,940		19,000	82,950	1,110	122,000
1901	18,619		15,489	272,538	7,000	313,646
1902	16,172		18,524	359,288	10,019	404,003
1903	40,335		12,035	209,634	2,290	264,294
1904	61,293		16,152	141,601		219,046
1905	84,952		12,681	193,464		291,097
1906	97,820		9,933	141,078		248,831
1907	89,839		12,748	207,769	2,500	312,856
1908	11,802		10,103	216,177		238,082
1909			4,150	263,893		268,043
1910	18,134	5,336	4,503	231,445		259,418
1911	22	31,120	3,616	175,586		210,344
1912	30,857	71,520	1,185	112,321		215,883
1913	20,436	86,416	5,102	195,680		307,634
1914		4,775		240,079		244,854
1915		3,683		394,429		398,112
1916			3,209	271,967		275,176
1917			17,150	198,152		215,302
1918	130		8,159	201,119	2,200	211,608
1919			321	195,649	1,200	197,170
1920			960	126,912	1,200	129,072
1921				58,499	1,010	59,509
1922			526	16,190	1,255	17,971
1923			69	30,447	243	30,759
1924			1,408	44	28	1,480
1925			3,978			3,978
1926			200			200
<b>Total</b>	<b>1,279,817</b>	<b>202,850</b>	<b>415,933</b>	<b>4,655,712</b>	<b>72,214</b>	<b>6,626,526</b>

Table 238.—Shipments of Iron Ore from Wabana Mines, Newfoundland, 1895-1926

Year	To Nova Scotia	To United States	To Great Britain and Europe	Total shipments
	Short tons	Short tons	Short tons	Short tons
1895.....	2,686			2,686
1896.....	17,410	22,798		40,208
1897.....	12,143	33,039	5,651	50,833
1898.....	34,622		78,640	113,262
1899.....	26,311	98,485	214,322	339,118
1900.....	195,507	153,867	14,776	364,150
1901.....	457,064	84,292	279,102	820,458
1902.....	376,322	96,762	341,421	814,445
1903.....	273,283	90,711	287,793	651,787
1904.....	342,710	6,025	298,694	647,429
1905.....	506,819	6,490	255,846	769,155
1906.....	628,152	141,854	213,867	983,873
1907.....	672,561	123,972	167,074	963,607
1908.....	713,772	59,532	200,033	973,337
1909.....	697,068	241,207	171,722	1,109,997
1910.....	808,762	247,336	203,528	1,259,626
1911.....	737,261	207,193	237,009	1,181,463
1912.....	956,458	191,779	183,673	1,331,910
1913.....	1,048,433	229,402	328,086	1,605,921
1914.....	417,409	43,513	172,998	633,920
1915.....	802,128		66,323	868,451
1916.....	1,012,060			1,012,060
1917.....	883,346			883,346
1918.....	848,574			848,574
1919.....	499,972			499,972
1920.....	624,596		36,708	661,304
1921.....	178,519		206,010	384,529
1922.....	211,482		811,845	1,023,327
1923.....	451,483		356,753	808,236
1924.....	174,602		919,908	1,094,510
1925.....	384,795		883,056	1,267,851
1926.....	465,961		503,640	969,601
<b>Total.....</b>	<b>15,562,271</b>	<b>2,078,197</b>	<b>7,438,538</b>	<b>25,079,006</b>

Table 239.—Imports into Canada, and Exports of Iron Ore, 1925 and 1926

	1925		1926	
	Quantity	Value	Quantity	Value
	Short tons	\$	Short tons	\$
<b>IMPORTS—</b>				
Iron ore from United States.....	694,824	1,622,191	985,222	2,241,435
Iron ore from Newfoundland.....	327,216	330,008	441,939	441,969
Iron ore from Sweden.....	15,185	63,375	38,554	170,145
Iron ore from other countries.....				
<b>Total.....</b>	<b>1,037,225</b>	<b>2,015,574</b>	<b>1,465,715</b>	<b>2,853,549</b>
<b>EXPORTS—Total.....</b>	<b>4,491</b>	<b>19,564</b>	<b>759</b>	<b>7,436</b>

### PIG IRON, STEEL AND ROLLED PRODUCTS

Statistics on pig iron, steel and rolled products, are regarded as belonging to "Manufactures" rather than to "Mining" but the close relation between the mining of iron ore and the production of pig iron and steel justifies the inclusion here of references to these secondary industries. The data given in this section have been taken from the Bureau's annual report on *"Iron and Steel and Their Products in Canada."*

Production of pig iron, steel ingots, direct steel castings and rolled iron and steel products in Canada was valued at \$41,183,565 in 1926, marking an increase of 22 per cent over the output value of \$32,909,463 in the previous year. This industry represented a capital investment in Canada of \$86,987,454; afforded employment to an average over the year of 6,140 people to whom there was paid \$9,054,170 in salaries and wages, and by manufacturing processes \$21,-270,842 was added to the value of purchased materials which cost \$19,912,723. Analysis of the output values by provinces showed the distribution to be as follows: Ontario, \$24,914,100; Nova Scotia, \$8,681,441; Quebec, \$6,040,683 and Manitoba, \$1,547,341.

(a) *Pig Iron*.—Blast furnace production totalled 757,317 long tons of pig iron, an increase of 33 per cent over the 570,766 tons of 1925. The year's output included 469,630 tons of basic iron, 243,307 tons of foundry iron and 44,380 tons of malleable iron. Disposition of the output, including about 31,478 tons retained in stock, was as follows: 453,665 tons went to the producing companies' own steel furnaces, and of the balance, 272,174 tons, was sold at an average mill price of \$21.83. In 1925 the average mill price was \$22.89. Taking the population of Canada at 9,390,300 persons in 1926, the per capita production of pig iron was 181 pounds, as against 136 pounds in the preceding year, 144 pounds in 1924, an average of 216 pounds in 1923 and 96 pounds in 1922.

Ontario produced 67 per cent of the Canadian output as against 65 per cent in 1925. Nova Scotia accounted for the balance in each year.

Of the 4 companies producing pig iron in 1926, there were 3 located in Ontario and 1 in Nova Scotia. In addition to the 4 producers of pig iron 1 plant in Ontario produced ferro-alloys as its principal product; these 5 plants employed a monthly average of 765 people and paid \$1,239,313 in salaries and wages. Ferro-alloys were also made in 3 other plants which have been classed in other industrial groups.

(b) *Steel Ingots and Direct Steel Castings*.—During the year 16 plants in Canada reported under the steel ingots and direct steel castings industry; Quebec had 7 plants, Ontario, 5; Manitoba, 3; and Nova Scotia, 1. Total steel furnace and converter production amounted to 776,262 long tons, an increase of 3 per cent over the 752,503 tons reported for 1925. Of this output, 749,798 tons were transferred to the rolling mill by the producing firms and 26,089 tons of direct steel castings were sold at an average price of \$186 per ton. No ingots were sold.

Employment in this industry averaged 2,463 persons; salaries and wages paid during the year totalled \$3,457,106.

(c) *Rolled Iron and Steel Products*.—Rolling mill sales were valued at \$27,675,129 in 1926, as compared with \$25,341,746 in 1925. During the year 936,782 long tons of iron and steel passed through the mills and of this total 864,615 tons came from the producing companies own plants, and 72,167 tons were purchased.

There were 12 iron and steel rolling mills operated in Canada during 1926 of which Manitoba had 1; Nova Scotia, 2; Quebec, 3; and Ontario, 6. These plants employed an average of 2,912 people each month and paid \$4,357,751 in salaries and wages during the year.

Rolling mill products sold during 1926 included the under-mentioned articles at approximate values as given: iron or steel bars, nearly 11 million dollars; steel rails, 8 million dollars; railway tie and fish plates, 2.4 million dollars; blooms, billets and slabs, over 1 million dollars; structural shapes over 1 million dollars; wire rods, 1.3 million dollars; spikes, 0.6 million dollars; and many other articles including sheets (no. 14 and thinner), nails and tacks, washers, pole line hardware, bolts, nuts and rivets, scrap, horse and mule shoes, etc.

Table 240.—Principal Statistics of the Pig Iron and Ferro-Alloys, Steel and Rolled Products Industry in Canada, 1922-1926

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of materials	Selling value of products	Value added by manufacturing
		\$		\$	\$	\$	\$
1922.....	25	78,687,321	5,331	7,825,286	22,355,289	35,427,053	13,071,765
1923.....	26	82,880,333	5,235	10,816,201	42,929,121	66,070,771	23,141,650
1924.....	29	79,805,201	5,325	7,201,588	*19,410,742	*33,553,443	*14,142,701
1925.....	31	80,757,625	4,946	7,079,099	*15,507,377	*32,909,463	*17,402,086
1926.....	33	86,987,454	6,140	9,054,170	*19,912,723	*41,183,565	*21,270,849

\*Figures of materials used for 1924, 1925 and 1926 are of purchased materials only, and for the same three years, production figures cover sales only. Data for previous years include estimated values for interplant transfers.

Table 241.—Principal Statistics of the Pig Iron and Ferro-Alloys, Steel and Rolled Products Industry in Canada, by Provinces, 1925 and 1926

Province	Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Production
			\$		\$	\$
Nova Scotia.....	1925	4	17,184,711	1,190	1,136,133	6,967,662
	1926	4	17,246,123	1,225	1,329,832	8,681,441
Quebec.....	1925	9	12,550,280	1,189	1,442,960	4,597,849
	1926	10	13,189,670	1,670	2,089,629	6,040,683
Ontario.....	1925	13	49,556,634	2,302	4,118,991	19,920,249
	1926	15	55,070,516	2,911	5,166,271	24,914,100
<b>Canada*</b> .....	1925	31	80,757,625	4,946	7,079,099	32,909,463
	1926	33	86,987,454	6,140	9,054,170	41,183,565

\*Includes data for 4 plants in Manitoba and 1 in British Columbia.

Table 242.—Materials Charged to Iron Blast Furnaces in Canada, 1926

Item	Quantity	Cost at furnace
		\$
Foreign iron ore.....	1,354,184 long tons	5,169,855
Pyrite cinder.....	5,101 long tons	15,643
Mill cinder, scale, slags, etc.....	47,562 long tons	107,523
Scrap.....	50,699 long tons	619,488
Limestone.....	421,602 short tons	569,046
Coke, from Canadian coal.....	318,407 short tons	1,453,929
Coke, from imported coal.....	500,600 short tons	2,899,180
Coke, imported.....	26,374 short tons	194,411
<b>Total</b> .....		<b>11,029,075</b>

Table 243.—Production of Pig Iron in Canada, by Grades, 1926

Item	Total tonnage made	Tonnage shipped to companies' own plants	Sales	
			Quantity	Value
	Long tons	Long tons	Long tons	\$
Pig Iron—				
Basic.....	469,630	443,435	16,548	341,956
Foundry.....	243,307	7,529	208,721	4,559,621
Malleable.....	44,380	2,701	46,905	1,041,226
<b>Total</b> .....	<b>757,317</b>	<b>453,665</b>	<b>272,174</b>	<b>5,942,803</b>

Table 244.—Materials Used in the Steel Ingots and Castings Industry in Canada, 1926

Item	Unit of measure	Companies' own production	Purchased materials	
			Quantity	Cost at furnace
(a) Metals:—				\$
Pig iron.....	Long ton	452,771	5,889	172,027
Spiegeleisen and ferromanganese.....	Long ton		3,947	270,447
Ferrosilicon.....	Long ton		4,711	300,258
Other ferro-alloys.....	Long ton		3,102	275,157
Scrap iron or steel (including old rails, not for re-rolling).....	Long ton	50,748	230,151	3,462,775
Scrap made and consumed in works reporting.....	Long ton	122,014		
Total metals.....	Long ton	625,533	247,800	4,480,664
(b) Ores:—				
Crude iron ore:—				
Canadian.....	Long ton			
Foreign.....	Long ton		46,962	314,372
Manganiferous ore:—				
Foreign.....	Long ton		4,436	61,677
Chrome:—				
Canadian.....	Long ton		3	337
Foreign.....	Long ton		374	11,846
Total ores.....	Long ton		51,775	388,232
(c) General materials:—				
Limestone.....	Short ton	40,978	60,629	127,308
Fluorspar.....	Short ton		6,009	79,651
Other fluxing material.....	Short ton	1,029	5,045	69,342
Coke from Canadian coal.....	Short ton		850	13,841
Coke made in Canada from imported coal.....	Short ton		449	5,902
Imported coke.....	Short ton		793	10,367
Anthracite coal.....	Long ton		1,069	10,726
Bituminous coal.....	Short ton		6,456	37,165
Charcoal.....	Bushel		52,777	12,359
Other materials.....				1,000,530
Total general materials.....				1,367,191
Total value of all metals, ores and general materials purchased.....				6,236,087

Table 245.—Products of the Steel Ingots and Castings Industry in Canada, 1926\*

Item	Total tonnage made	Tonnage shipped to companies' own plants	Sales	
			Quantity	Value
	Long tons	Long tons	Long tons	\$
Steel Ingots:—				
Basic open hearth.....	744,103	744,103		
Direct Steel Castings:—				
Electric or electrically refined.....	10,247	68	10,362	2,267,942
(x) Other.....	21,912	5,627	15,727	2,578,033
<b>Total</b> .....	<b>776,262</b>	<b>749,798</b>	<b>26,089</b>	<b>4,845,975</b>

\*Production figures as given herein do not necessarily represent the total Canadian output; there may be also a small production in other industrial groups.

(x) Includes acid open hearth steel ingots and castings, basic open hearth steel castings, converter castings, also some brass and iron castings.

Table 246.—Materials Used in the Rolled Iron and Steel Products Industry in Canada, 1926

Item	Companies' own make	Purchased materials	
		Quantity	Cost at furnace
	Long tons	Long tons	\$
Steel, crude and semi-finished (ingots, blooms, billets, slabs).....	854,524	21,299	684,752
Rails for re-rolling.....	5,158	35,539	613,966
Iron muck and scrap bar.....	3,667	1,618	34,696
Iron and steel skelp.....	963		
Iron and steel wire rods.....	303	2,211	80,216
Iron and steel scrap.....		8,162	127,809
Arjes.....		3,338	78,609
All other materials.....			32,288
<b>Total.....</b>	<b>864,615</b>	<b>72,167</b>	<b>1,652,336</b>

Table 247.—(x) Products of the Rolled Iron and Steel Products Industry in Canada, 1926

Item	Total tonnage made	Tonnage shipped to companies' own plants	Sales	
			Quantity	Value
	Long tons	Long tons	Long tons	\$
Blooms, billets and slabs.....	888,296	858,681	43,133	1,044,286
Bars:—				
Sheet and tinplate bars.....	24,635	24,635		
Muck and scrap bar.....	8,855	8,855		
Bar iron or steel, rolled, whether in coils, bundles, rods or bars, comprising rounds, ovals, squares and flats.....	188,867	27,914	157,582	8,296,075
Re-inforced concrete bars (including twisted).....	38,062	313	37,198	2,482,371
Bars, other.....	18,180	14,826	3,348	215,913
Rails, open hearth steel.....	166,820	72	170,715	7,882,349
Iron and steel rods:—				
Wire rods.....	122,506	92,499	29,161	1,340,206
Spike and chain rods.....	2,904	2,904		
Structural, including angles, beams, channels, girders, etc., not assembled or fabricated.....	25,948	393	24,265	1,083,483
Railway tie plates.....	37,574	69	37,639	2,109,226
Railway fish plates.....	4,440		4,179	279,751
Railway spikes.....			Kegs 180,697	613,833
Nails and tacks (not wire).....				235,804
*Products reported by only 1 or 2 firms.....				2,091,832
<b>Total.....</b>				<b>27,675,129</b>

(x) Production figures as given herein do not necessarily represent the total Canadian output; there may be also a small production in other industrial groups.

\*Includes sheets (No. 14 and thinner); bolts, nuts and rivets; washers, cross arm braces; wire nails; scrap; horse and mule shoes.

**Table 248.—World Production of Iron and Steel and Steel Ingots and Castings,**

(In thousands of long tons—2,240 lbs.)

As Reported by *Iron Trade Review*

Countries	Pig iron			Steel ingots and castings		
	1913	1925	1926	1913	1925	1926
United States.....	30,653	36,370	39,275	31,301	45,400	48,580
Canada.....	1,015	596	780	1,043	753	775
Great Britain.....	10,260	6,236	2,400	7,664	7,397	3,500
France.....	5,126	8,358	9,230	4,614	7,327	8,245
Belgium.....	2,445	2,501	3,340	2,428	2,372	3,321
Luxemburg.....		2,325	2,450		2,053	2,189
Italy.....	420	474	445	919	1,757	1,530
Spain.....	418	461	460	238	571	615
Sweden.....	732	425	460	582	467	486
Germany.....	19,000	10,014	9,250	18,632	11,998	11,905
Saar Territory.....		1,430	1,600		1,550	1,700
Austria.....	2,344	374	325	2,585	462	480
Czechoslovakia.....		1,147	1,230		1,476	1,574
Poland.....		310	305		771	740
Hungary.....		92	157		234	253
Russia.....	4,563	1,621	2,300	4,181	2,087	2,975
Japan.....	236	825	850	300	1,150	1,200
China.....	150	300	300	100	150	150
India.....	204	888	890		449	450
Australia.....	47	439	450		351	300
Miscellaneous.....	200	250	300	100	200	200
<b>Total.....</b>	<b>77,813</b>	<b>75,336</b>	<b>76,797</b>	<b>74,687</b>	<b>88,975</b>	<b>91,238</b>

Figures for Germany include Luxemburg prior to 1919 and the Saar prior to 1920; figures for Austria prior to 1919 include the major portions of Czechoslovakia and Hungary; Poland's production prior to 1919 is covered in the figures for Germany and Russia; since 1920 Poland's figures include most of Upper Silesia, and the Saar is given separately. Japan's figures include Manchuria and Chosen.

**MANGANESE**

No manganese has been produced in Canada since 1924 when 584 tons of ore valued at \$4,088 were produced in the province of New Brunswick. Deposits of manganese are also known to occur in Lunenburg county, Nova Scotia, and in British Columbia near the town of Kaslo.

The importance of manganese in the manufacture of iron and steel is steadily increasing. A large part of the consumption is in the manufacture of manganese-iron alloys (spiegeleisen and ferromanganese) for the manufacture of certain steels.

The greatest deposits and the chief sources of manganese up to the present time are in Russia (Caucasus), Southern and Central India and East Central Brazil. It also occurs in commercial quantities in several countries of Europe, Canada, the United States, Mexico, and in Queensland, Australia.

**Table 249—Production of Manganese Ore in Canada, 1886-1926**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	1,789	41,499	1899.....	1,581	20,004	1912.....	75	1,875
1887.....	1,245	43,658	19 0.....	30	1,800	1913.....		
1888.....	1,801	47,944	1901.....	440	4,820	1914.....	28	1,120
1889.....	1,455	32,737	1902*.....	172	4,062	1915.....	201	9,360
1890.....	1,328	32,550	1903.....	91	2, 75	1916.....	957	89,544
1891.....	255	6,694	1904.....	66	2,740	1917.....	158	14,836
1892.....	115	10,250	1905*.....	22	1,720	1918.....	440	6,230
1893.....	213	14,578	1906*.....	93	925	1919.....	661	14,159
1894.....	74	4,180	1907*.....	1	22	19 0.....	649	11,0 9
1895.....	125	8,464	1908.....			1921.....	68	3,400
1896*.....	124	3,975	1909.....			1922.....	73	2,044
1897*.....	15	1,166	1910.....			1923.....	200	1,400
1898.....	50	1,600	1911.....	6	300	1924.....	584	4,088
						1925-26.....		
<b>Total.....</b>							<b>15,185</b>	<b>447,548</b>

\*Exports.

Table 250—World Production of High-Grade Manganese Ore 1913 and 1920-1926

(From *The Mineral Industry, 1926*)

(Metric tons)

Country	1913	1920	1921	1922	1923	1924	1925	1926
Argentina (a).....	—	—	—	—	—	—	(d)	(d)
Austria (b).....	16,540	5,000	2,000	—	—	—	(d)	(d)
Australia (c).....	27 (l)	3,112 (l)	6,066 (l)	3,323 (l)	2,865	4,838	1,183	(d)
Belgium.....	—	—	—	—	—	—	—	—
Bosnia and Herzegovina.....	4,697 (m)	50,315 (m)	43,541 (m)	23,550 (m)	42,043 (m)	79,133 (m)	54,054 (m)	(d)
Brazil (e).....	122,300	453,737	275,694	340,706	235,831	159,229	302,305	311,253
British India.....	828,087	748,259	690,189	482,015	706,210	815,894	852,934	(d)
Canada.....	—	588	62	66	181	530	—	—
Hungary.....	19,004	(d)	(d)	(d)	403	1,217	6,280	(d)
Italy.....	1,622	36,158	4,558	4,529	9,605	12,189	17,345	13,600
Japan.....	18,039	5,476	3,881	4,440	5,494	7,585	10,317	(d)
Mexico.....	—	1,137	559	—	2,246	1,800	(d)	(d)
Panama (a).....	—	—	—	—	406	—	(d)	(d)
Porto Rico.....	—	(d)	(d)	(d)	2,799	4,698 (a)	4,260 (a)	(d)
Chile.....	(d)	11,633	23	900	4,287	4,243	(d)	(g) 100,000
China (e).....	—	25,384	25,627	19,230	27,672	38,538	43,260	(d)
Costa Rica (a).....	—	(l) 3,252 (l)	589	(d)	(d)	(d)	—	—
Cuba.....	11,589 (e)	8,247 (e)	2,930 (e)	4,351 (e)	19,636 (e)	23,758 (e)	12,950 (a)	14,343 (a)
France.....	7,732	5,697	1,923	5,224	5,993	3,680	3,185	2,625
Germany.....	330,797	7,316	3,385	5,532	10,245	3,554	(d)	(d)
Gold Coast (i).....	—	(l) 44,292 (l)	7,310 (l)	67,174 (l)	141,875	259,441	330,000	(d)
Greece.....	556	—	—	—	—	(d)	—	(d)
Russia and Georgia.....	1,254,658 (l)	178,576 (l)	29,283 (l)	195,741 (l)	413,960 (l)	499,799 (n)	816,507 (n)	973,000 (n)
Spain.....	21,594	21,256	20,098	25,455	28,615	20,840	36,072	(d)
Sweden.....	4,001	14,926	6,253	4,528	5,203	10,885	10,941	(d)
Tunisia and Algeria.....	—	(l) 5,259	5,629	2,022	1,804	3,626	2,105	1,428
United Kingdom.....	5,480	13,082	522	254	2,053	2,496	843	(d)
United States.....	4,113	95,940	13,748	13,619	32,006	57,422	99,902	47,003
<b>Total.....</b>	<b>2,659,836</b>	<b>1,738,642</b>	<b>1,143,870</b>	<b>1,202,659</b>	<b>1,701,432</b>	<b>2,015,395</b>	<b>2,604,443</b>	(d)

Production:—Rumania; 1920;—3,368 tons. Dutch East Indies; 1920, 4,178 tons.

(a) Exports actually received by the United States in those years. (b) Austria and Hungary combined until 1913 and reported under Austria. (c) Includes New Zealand. (d) Statistics not available. (e) Official statistics of exportation (g) Estimated. (i) Shipments. (j) Georgia only. (l) Records of the Imp. Min. Res. Bur. (London). (m) Czechoslovakia. (n) Fiscal year ending Sept. 30.

## MERCURY

During 1926 a small amount of mercury was recovered from a property on the north shore of Kamloops lake, B.C. In 1895, 1896 and 1897 a small production was derived from the same district.

Cinnabar, the principal ore of mercury is found in many countries of the world but the chief producing countries are Italy, Spain and United States in order of their importance. Mercury is used in the amalgamation of gold and silver and as a fulminate in the making of detonators. It also enters largely into the manufacture of drugs, and vermilion (mercuric sulphide) the well-known red pigment. Its increased use in the United States is due to the greater consumption in electrical apparatus such as radios, meters, and storage batteries.

Table 251.—Production of Mercury in Canada, 1895-1926

Year	Flasks	Price per flask	Value
		\$	\$
1895.....	71	33-00	2,343
1896.....	58	33-44	1,940
1897.....	9	36-00	324
1898-1926.....			

Table 252—Imports into Canada of Mercury, 1922-1926

Year	Pounds	Value \$
1922.....	59,296	47,742
1923.....	135,953	95,922
1924.....	85,459	60,675
1925.....	146,435	118,697
1926.....	100,492	84,910

Table 253.—Monthly Average Price of Mercury, 1924-1926

(At New York, per flask of 75 pounds)

Month	1924 \$	1925 \$	1926 \$
January.....	59.500	81.596	87.960
February.....	59.565	79.386	87.580
March.....	64.269	80.481	88.194
April.....	74.308	82.327	89.769
May.....	76.962	81.360	91.365
June.....	73.720	83.154	91.346
July.....	72.173	83.077	90.163
August.....	72.096	82.317	89.260
September.....	72.423	81.730	91.425
October.....	70.654	83.856	97.260
November.....	68.708	88.250	99.000
December.....	72.750	90.000	99.510
<b>Average.....</b>	<b>69.761</b>	<b>83.128</b>	<b>91.903</b>

Table 254.—World Production of Mercury 1913 and 1920-1926

(From *The Mineral Industry*, 1926)

(In metric tons)

Country	1913	1920	1921	1922	1923	1924	1925	1926
Austria.....	819						6	
China. (a).....	2	45	98	17	2	3	3	(d)
Czecho-Slovakia (e).....	89	67	57	6	51	78 (c)	80	(d)
Italy.....	1,004	1,401	1,071	1,541	1,656	1,641	1,833	1,810
Mexico.....	166	77	46	42	45	27	39	45
Spain.....	1,245	861	635	1,318	1,144	899	1,277 (a)	1,676
United States.....	670	455	216	217	270	343	312	260
Other countries.....	28	6	12	104	104	132	79	(d)
<b>Total.....</b>	<b>4,023</b>	<b>2,912</b>	<b>2,135</b>	<b>3,245</b>	<b>3,272</b>	<b>3,133</b>	<b>3,629</b>	.....

(a) Exports. (b) Idria mines ceded to Italy after 1918. (c) Estimated. (d) Not yet available. (e) Prior to 1919; Hungary.

## MOLYBDENUM

Molybdenite deposits are known to occur in Nova Scotia, Quebec, Ontario, Manitoba and British Columbia, but the principal production has come from the Moss Mine near Quyon in Pontiac county, Quebec.

The Moss mine at Quyon, Quebec, reported a production of 25,168 pounds of molybdenum concentrates containing 20,943 pounds of molybdenum sulphide which, at 50 cents per pound, was worth \$10,472. All the molybdenite ore produced in Canada has been concentrated in Canadian mills erected for the purpose.

The war stimulated the demand for molybdenum ores to an appreciable extent but with the cessation of hostilities, the producers were left with considerable stocks on hand for which

there was no immediate market, owing to the limited uses of the metal. The ore produced was mostly low-grade material carrying less than 2 per cent  $\text{MoS}_2$ , but there was some which ran from 2 to 15 per cent  $\text{MoS}_2$ , and some higher grade hand-picked material produced.

Molybdenum is chiefly used in the manufacture of molybdenum steel for use in automotive construction. The principal producing countries during the last three years were United States, Norway, Australia and Canada.

Table 255.—Production of Molybdenite in Canada, 1902-1926

Year	Ores mined	Ores treated	Ores and concentrates shipped		MoS <sub>2</sub> content of shipments	MoS <sub>2</sub> production (probable recovery)	
	Tons	Tons	Tons	Value (a) \$	Pounds	Pounds	Value (b) \$
1902.....	3	.....	3.3	400	(c)	(c)	(c)
1903.....	600	.....	85.0	1,275	(c)	(c)	(c)
1904-1913.....	.....	.....	.....	.....	.....	.....	.....
1914.....	166	.....	16.5	2,063	3,814	3,814	2,063
1915.....	2,242	216	39.0	28,920	29,210	29,210	28,450
1916.....	13,522	9,100	610.0	188,316	156,461	156,461	156,461
1917.....	26,871	22,605	1,554.3	320,006	330,316	288,705	288,705
1918.....	34,030	33,935	461.3	428,807	378,482	378,029	434,733
1919.....	7,280	6,783	46.0	69,203	83,002	83,002	69,203
1920-1923.....	.....	.....	.....	.....	.....	.....	.....
1924.....	700	668	10.0	9,370	18,739	18,739	9,307
1925.....	3,000	2,779	15.3	11,176	22,350	22,350	11,176
1926.....	4,186	4,490	12.6	10,472	20,943	20,943	10,472

(a) Value as given by the operators. (b) Estimated at the average market value of molybdenite.

(c) No figures available.

Table 256.—World Production of Molybdenum

(In 1000 pounds molybdenum content)

(From *The Mineral Industry*, 1926)

Country	1920	1921	1922	1923	1924	1925	1926	Total (b)
Australia, N.S.W.....	45	—	2	12	13	7	.....	929
Australia, Queensland.....	34	11	2	12	2	4	—	2,376
Australia, Victoria.....	3	—	17	40	48	39	36	191
Canada.....	—	—	—	—	11	17	13	630
Japan.....	2	—	—	—	—	—	—	63
Korea.....	—	—	—	—	—	—	—	38
Norway.....	—	—	—	46	94	159	—	1,526
Spain.....	67	—	—	—	—	—	—	159
Sweden.....	1	—	—	—	—	—	—	191
United States.....	35	—	—	—	297	1,154	1,371	4,719
All other countries.....	9 (a)	8	7	—	—	—	—	452
<b>Total.....</b>	<b>205</b>	<b>19</b>	<b>28</b>	<b>110</b>	<b>465</b>	<b>1,380</b>	<b>1,420</b>	<b>11,254</b>

(a) During 1920 and 1921, respectively, 16 and 1,886 long tons of ore was exported from China. (b) Beginning with the earliest mining records.

## TIN

Tin ores have not yet been found in sufficient quantities in Canada to be of economic importance.

The occurrence of tin ore has been reported from several localities, the most important perhaps being the discovery of cassiterite, near New Ross, Lunenburg county, N.S. Reports upon it may be found in the Summary Reports of the Geological Survey Branch of the Department of Mines for 1907, 1908, 1910, 1911 and 1912.

Cassiterite occurs in a few scattered crystals in pegmatite dykes in the drainage basin of McDougal creek, Lardeau division, B.C., and it has been found also in black sands in the Atlin district, B.C., and in the alluvial sands of Dublin gulch, Mayo district, Yukon.

Tin is also found in Sullivan mine ore which is primarily lead and zinc. It has been separated by the Consolidated Mining and Smelting Company, Limited, but up to the present, the work has been only experimental and there has been no commercial production of the metal from this source.

An occurrence of tin has been noted in some bodies of sulphide minerals found in the vicinity of West Hawk and Star Lakes, near the boundary line between Ontario and Manitoba.

Ores of tin were formerly imported from South America and reduced in Canada by the Electro Tin Products Company at Brantford, Ontario. The plant, which consisted of roasting furnaces, electric smelting and slag-cleaning furnaces, was dismantled some years ago when competition of European smelters treating the easily-reducible tin concentrates from the Malay States, made the operation of the Canadian plant (and several in the United States) unprofitable.

Table 257.—Imports into Canada of Tin, 1924-1926

	1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value
		\$		\$		\$
Tin in blocks, pigs and bars.....	4,003,600	1,971,035	4,396,100	2,459,830	5,107,900	3,263,513
Tin foil.....	1,318,168	402,370	558,997	222,657	304,242	179,265
Strip waste.....	49,973	74	1,000	38	498,200	3,139
Collapsible tubes.....		19,844		27,500		43,318
Dairy tin.....		38,246		64,990		80,716
Tinware, etc. (a).....		626,846		593,579		685,655
Tin cans and containers.....		545,646		679,718		666,281
Bichloride of tin or tin crystals.....	90,749	23,060	149,301	46,671	223,913	76,081
<b>Total.....</b>		<b>3,627,121</b>		<b>4,094,983</b>		<b>4,997,968</b>

(a) Tinware, plain, japanned or lithographed, and all manufactures of tin, n.e.s.

Table 258.—World Production of Tin (a) 1915 and 1920-1926

(From *The Mineral Industry*)

(Long tons)

Country	1915	1920	1921	1922	1923	1924	1925	1926
Australia.....	5,836	5,233	3,592	2,570	3,283	3,069	3,016	2,915
Bolivia (b).....	21,544	27,821	18,804	31,616	29,777	31,553	32,083	.....
China.....	7,995	10,566	11,200	(d) 12,435	(d) 8,727	(d) 6,858	(d) 8,789	(d) 6,538
Congo (b).....	28	210	410	567	496	483	(e) 600	.....
Dutch East Indies.....	19,255	21,181	26,382	29,278	29,138	31,558	32,749	33,006
Federated Malay States (b).....	46,765	34,935	34,490	35,286	37,649	44,043	45,925	45,946
Great Britain.....	4,968	3,065	679	370	1,021	1,986	2,339	2,327
India.....—	430	1,648	1,362	1,530	1,405	1,375	1,323	1,296
Japan.....	336	201	290	282	300	341	350	.....
Nigeria.....	4,837	5,168	5,067	5,123	5,912	6,162	6,186	7,042
Portugal and Spain.....	293	128	66	(e) 200	(e) 100	(e) 100	(e) 100	(e) 100
Siam (c).....	8,998	6,201	6,150	6,979	7,684	7,793	6,802	6,978
Unfederated Malay States (b).....	3,040	1,992	1,747	1,937	1,727	2,870	2,145	2,220
United States.....	91	19	3	1	2	6	12	7
Union of South Africa.....	2,056	1,429	720	470	884	1,150	1,142	1,087
Other countries (e) (f).....	400	2,300	2,500	1,700	900	1,100	1,200	1,100
<b>Total.....</b>	<b>126,872</b>	<b>122,097</b>	<b>113,462</b>	<b>130,344</b>	<b>129,005</b>	<b>140,447</b>	<b>144,761</b>	<b>110,562</b>

(a) Tin content of ore.

(b) Exports. (c) Fiscal years ending March 31, of succeeding calendar year.

(d) Shipments to Europe, Asia, and the United States. (e) Estimated.

(f) Including French Indo-China, Germany, Swaziland, etc.

## CHAPTER SEVEN

**The Non-Ferrous Smelting and Refining Industry in Canada**

Co-incident with the expansion in the mining of ores bearing non-ferrous metals, there has been a notable growth in the smelting and refining of such ores in Canada. Abundant water power, advantageously distributed over the Dominion, has made possible the generation of electric energy at such a low price that the use of electrochemical or electrothermic processes has been adopted in many new fields. Among these may be noted the smelting of bauxite ores and the production of aluminium in various forms in Quebec, the refining of nickel and copper in central Ontario, the manufacture of electrolytic lead and zinc in British Columbia. Electric furnaces are also used in the manufacture of abrasives and ferro-alloys, and, in a small way, in the treatment of iron and steel.

As a source of power, electric energy is being used to an increasing extent in the mining and milling fields and important economies in operation are being effected.

In the treatment of ores, the mining and milling operations are so closely associated, that it is impossible to make a separation of the statistics in these two steps. There is less difficulty in drawing a line between mining and milling on the one hand, and smelting and refining on the other. This chapter is devoted to a consideration of the smelting and refining industry in Canada treating the ores of the non-ferrous metals.

The 9 plants operated by the 7 companies included in this group in 1926 were as follows:— 1 plant at Arvida and 1 plant at Shawinigan Falls, Quebec, both operated by the Aluminium Company of Canada, Limited; the smelter at Coniston, Ontario, operated by the Mond Nickel Company of Canada, Limited; the smelter at Coppercliff and refinery at Port Colborne, Ontario, operated by the International Nickel Company of Canada, Limited; the smelter and hydrometallurgical works of the Deloro Smelting and Refining Company at Deloro, Ontario; the smelter of the Kingdon Mining, Smelting and Manufacturing Company, Limited, near Galetta, Ontario; the smelter, lead refinery, zinc refinery, precious metals refinery and copper refinery of the Consolidated Mining and Smelting Company at Tadanae, near Trail, B.C.; and the smelter of the Granby Consolidated Mining, Smelting and Power Company, Limited, at Anyox, B.C.

Interest in the non-ferrous metallurgical industry in Quebec during the year centred in the erection by the Aluminium Company of Canada of a large new plant at Arvida for the reduction of imported bauxite ore, and in the establishment of a smelter in the Rouyn district for the treatment of the copper-gold ores from the mines in that area. Smelting of alumina imported from the United States has been carried on at Shawinigan Falls for many years, and the building of the new plant at Arvida by the same company will place the province of Quebec in an enviable position as a producer of aluminium metal in its various forms.

In the Horne Copper Corporation, Quebec has another industrial enterprise that has attracted much attention since its formation. Operation of the Horne mine, and of the new smelter on which construction was begun early in 1926, by this corporation, is expected to put Quebec among the more important metal-producing provinces; treatment of customs ores from the mines of the district will add to the smelter's output.

Ontario has 4 smelters and 1 refinery in operation. The Mond Nickel Company Limited operates a smelter at Coniston, Ontario, producing a matte that is then shipped to the refinery operated by the same company at Clydach, Wales, where nickel metal, copper sulphate, gold, silver, and the metals of the platinum group are produced. The International Nickel Company mines and smelts nickel-copper ore at Coppercliff, Ontario, producing a nickel-copper matte, part of which is shipped to Huntington, West Virginia, U.S.A., where it is made into the alloy

known as monel metal, and the remainder is shipped to the company's refinery at Port Colborne, Ontario, where refined and electrolytic nickel, converter copper and sponge platinum are made. The Deloro Smelting and Refining Company of Deloro, Ontario, treats ores from the districts of Cobalt, South Lorrain and Gowganda and produces refined silver, cobalt metal, cobalt oxides and salts, nickel metal, nickel oxides and salts, white arsenic, various insecticides and stellite, an alloy of cobalt, chromium and tungsten used mainly as a metal cutting tool. The Kingdon Mining, Smelting and Manufacturing Company operates a lead mine, mill and small smelter or Scotch hearth at Galetta, Ontario. As the general statistics given by the last named company were not separated by departments and as mining and milling predominate in this enterprise, data on capital investment, salaries, wages, etc., for this property have been combined with the statistics on silver-lead-zinc mining, but the value of the smelter production has been included with the figures for the other smelters. An estimate was made of the value of the ores smelted and this figure was included in the totals for the silver-lead-zinc mining section, so that the proper adjustments have been made to ensure the comprehensive treatment of mine and smelter statistics.

British Columbia is the only other province in the Dominion in which there are non-ferrous smelting plants in operation. In this province there are 2, one operated by the Consolidated Mining and Smelting Company at Trail, and the other by the Granby Consolidated Mining, Smelting and Power Company, Limited, at Anyox. The smelter at Trail is the largest non-ferrous metallurgical works in the British Empire. There facilities are provided for the treatment of lead ore and concentrates, zinc ore and concentrates, copper and gold ore and concentrates. This smelter purchases practically all the smelting ore mined in southern British Columbia but its main source of supply is from the famous Sullivan zinc-lead mine at Kimberley, B.C., which is owned by the company. Each year new demands have been made on the capacity of the smelter, which have been met so readily that very little smelting material within reasonable hauling distance is now sent elsewhere. This company also operates a concentrator to which mining companies that have no mill may send their ore.

In the northern part of the province there is the copper smelter of the Granby Consolidated Mining, Smelting and Power Company Limited, which treats the ore from its own mine, the Hidden Creek, and does some custom work as well. During 1926 and in former years some concentrates from the company's concentrator were shipped to Tacoma, Washington, U.S.A., but a new sintering plant has been installed and the old one has been improved, so that it is now expected the smelter will be able to handle all the concentrates produced by the mill.

Capital invested in the metallurgical plants in Canada, reviewed in this section, amounted to \$81,779,240 in 1926, including \$54,976,248 invested in lands, buildings, plants, machinery and tools; \$17,035,037 in materials on hand, supplies, finished products and ore waiting to be treated; and \$9,767,955 in cash, trading and operating accounts and bills receivable.

There were 6,226 employees including salaried workers and wage-earners engaged in this industry during the year. Salaries and wages reached a total of \$9,584,938. Fuel cost \$6,076,627—including coke worth \$2,450,301; electricity, \$2,283,604; and bituminous coal, \$883,568. The total power employed was 166,360 h.p., comprising 12,855 h.p. generated by steam engines and steam turbines; 53 h.p. from gasoline, oil and gas engines; 64,435 h.p. supplied by hydraulic turbines and water wheels; and 89,017 h.p. by electric motors which were operated on purchased power. In addition there were 517 other electric motors in use having a combined rating of 19,134 h.p., which were operated by power generated by the primary power of the industry.

Owing to the difficulty of obtaining separate data on mining, milling and smelting operations, particularly in the case of companies carrying on all three operations at one point, it was necessary in some cases to use estimates for the value of the ores at the mine. In these cases every care was taken to establish fair values. As thus computed, the value of the 2,552,014 tons of ore charged to the furnaces in the several smelters amounted to \$39,237,657. Sales from these smelters amounted to \$72,853,566, showing that the value added in converting the ore to saleable products was \$33,615,909.

**Table 259.—Ores, Concentrates and Residues Smelted and Value of Smelter and Refinery Products in the Non-Ferrous Smelting and Refining Industry, 1926**

	Tons	\$
Materials used— Ores, concentrates, residues, etc.....	2,552,014	39,237,657
Products made— (Gold, silver, blister copper, refined copper, lead, zinc, nickel, nickel-copper matte, nickel oxide, nickel salts, cobalt, cobalt oxide, cobalt salts, speiss residues, aluminium, base bullion).....		72,853,566

**Table 260.—Capital Employed in the Non-Ferrous Smelting and Refining Industry in Canada, 1926**

	Value
	\$
Lands, buildings, plants, machinery and tools.....	54,976,248
Materials on hand, supplies, finished products, ore in storage.....	17,035,037
Cash, trading and operating accounts, bills receivable.....	9,767,955
<b>Total.....</b>	<b>81,779,240</b>

**Table 261.—Employees, Salaries and Wages in the Non-Ferrous Smelting and Refining Industry in Canada, 1926**

	Number of employees		Salaries and wages
	Male	Female	\$
<b>SALARIED EMPLOYEES—</b>			
Total.....	590	45	1,240,936
<b>WAGE-EARNERS—</b>			
January.....	5,162		8,344,002
February.....	5,192		
March.....	5,231		
April.....	5,278		
May.....	4,968		
June.....	4,961		
July.....	5,220		
August.....	5,581		
September.....	5,808		
October.....	6,107		
November.....	6,129		
December.....	5,904		
*Average.....	5,591		
<b>Total.....</b>	<b>6181</b>	<b>45</b>	<b>9,584,938</b>

\*See note on page 30.

Table 262.—Fuel and Electricity Used in the Non-Ferrous Smelting and Refining Industry, 1926

Item	Unit of measure	Quantity	Value
			\$
Bituminous coal.....	short tons	139,364	883,568
Anthracite coal.....	short tons	285	4,404
Coke.....	short tons	253,130	2,450,301
Gasoline.....	imp. gals.	42,180	6,533
Fuel oil.....	imp. gal.	3,743,565	357,133
Wood.....	cords (128 cu. ft.)	5,958	40,273
Gas.....	M cu. ft.	364,819	50,811
Electricity.....	k.w.h.	876,182,647	2,283,604
<b>Total.....</b>			<b>6,076,627</b>

Table 263.—Power Employed in the Non-Ferrous Smelting and Refining Industry in Canada, 1926

	Number of units	Total h.p.
Steam engines and steam turbines.....	27	12,855
Internal combustion engines.....	1	53
Hydraulic turbines or water wheels.....	21	64,435
<i>Total primary power.....</i>	<i>49</i>	<i>77,343</i>
Electric motors run by purchased power.....	1,303	89,017
<b>Total power equipment employed.....</b>	<b>1,352</b>	<b>166,360</b>
Electric motors run by primary power in same plant.....	517	19,134
<i>Total electric motors.....</i>	<i>1,820</i>	<i>108,151</i>
Boilers.....	17	5,709

## CHAPTER EIGHT

## THE NON-METAL MINING INDUSTRIES IN CANADA. (Other than Fuels)

Including detailed data relating to operations in the following industries:—

- Abrasives
- Asbestos
- Feldspar
- Graphite
- Gypsum
- Iron oxides
- Mica
- Quartz
- Salt
- Talc and soapstone.
- Miscellaneous—
  - Actinolite
  - Barytes
  - Bituminous sands
  - Fluorspar
  - Lithium minerals
  - Magnesite
  - Magnesium sulphate
  - Mineral waters
  - Natro-alunite
  - Phosphate
  - Pyrites
  - Silica brick
  - Sodium carbonate
  - Sodium sulphate

## Abrasives, Natural

## CANADA

Corundum, diatomite, garnets, grinding pebbles and volcanic dust are all discussed.

Data regarding these various abrasive materials will be found in the reviews of the several provinces in which they occur.

**GRINDSTONES.**—The early history of the grindstone industry in Canada has been outlined by V. L. Eardley-Wilmot of the *Federal Department of Mines*, as follows:—

The quarrying and manufacture of grindstones is one of the oldest industries in Canada. There are in northwestern Nova Scotia and southeastern and northeastern New Brunswick probably upwards of a hundred old sandstone quarries which have at some time been worked for grindstones.

The grindstone industry had its beginning at the head of Chignecto bay, near Minudie, Cumberland county, Nova Scotia, about 1750, when the sandstone beds were worked by the French. For a number of years activities were confined along the coast at "The Joggins" now called Lower Cove, 6 miles to the south of Minudie. These quarries which were first worked by the English in 1790, eventually became the largest on the bay of Fundy, and were operated almost continuously until 1906. About 1764, Joseph Des Barres, Governor of Prince Edward Island, secured a Crown grant of the Minudie-Joggins territory and leased various sandstone ledges to the farmers, who for many years made rough grindstones by hand.

Old records between 1800 and 1830 showed that an enterprising storekeeper by the name of William Harper used to make periodic rounds in his schooner, the "Weasel", visiting Dorchester, Hopewell, Grindstone island, Sackville, and Joggins, and exchange food, clothing, and other necessities for the grindstones made in these places. Cargoes of 40 to 60 tons of stones were frequently collected and distributed to local users; he also found a ready market for large quantities of stones at "Quoddy" (Passamaquoddy) which was then on the disputed International Boundary. There were several other traders besides Harper, who engaged in this business.

During the years 1815 to 1830, Messrs. Joseph Read and John T. Seaman acquired control of the Lower Cove quarries from the Des Barres' estate and made regular shipments of grindstones to the United States by means of small vessels. These shipments went only as far as the frontier port of Eastport where they were transferred into United States vessels for Boston and other places. In 1824, a branch office was established at Boston by Joseph Read, 2nd, which was continually maintained by him and his successors until 1888.

Between 1830 and 1833 the Des Barres' estate was purchased by Amos, youngest brother of John T. Seaman, and he and his successors, except for short leases, continued the business at Lower Cove and the near vicinity until about 1895. After Amos Seaman obtained control of the Lower Cove quarries in 1833, Joseph Read 2nd, opened sandstone quarries at Ragged Reef, on the Chignecto Bay shore, some 6 miles to the south. He also had grindstones made by contract at other places in the bay where suitable rock was bared by the tides, principally at Sand cove, Sand river, and around the mouth of the Apple river, along a distance of about 25 miles of shore line. Stones from the latter quarries, exported to the United States, were often shipped in Parrsboro schooners, which accounts for the shipments of grindstones from Parrsboro mentioned in old reports.

Operations in this area were barely profitable after 1860 owing to increased difficulties in quarrying operations, to the abrogation of the Reciprocity Treaty in 1866, to the imposition of high duties by the United States in the sixties, and to the opening of large quarries in Ohio."

Data obtained in the census of 1871 show that capital invested in grindstone plants in Canada was \$58,509; employment was furnished 328 men with a total wage of \$53,987; and the value of products made was \$78,395. Ten years later, the 11 quarries in operation represented an investment of \$70,700; employed 204 men and produced stones to a value of \$50,737. In 1886, there were 6 quarries operating with a total production of 4,020 tons. The maximum recorded output for the industry during the period 1886 to 1926 was reached in 1888 when 5,764 tons were shipped. During 1926 the production totalled 1,513 tons made up of 311 tons from Nova Scotia and 1,202 tons from New Brunswick.

Old records show that the average price of grindstones, between 1800 and 1830, was about 5 to 6 shillings per "stone" or between 70 and 80 shillings per ton. There are, however, many instances of poor quality stones selling for 9 shillings per ton and one case is cited of 60 tons being sold at 7 shillings per ton. In 1860 the average price was about \$13 per ton. From 1874 to 1879, the price dropped from \$16 to \$13 and maintained an average of \$12 until 1888.<sup>1</sup>

Prices varied from \$8 to \$9 per ton during the period 1888-1904; but increased to \$10.95 in 1905 and remained fairly constant until 1914. A considerable annual advance was recorded during the ensuing years until the maximum of \$38.20 per ton was reached in 1921. The average price obtained in 1926 was \$37.30 per ton.

**PULPSTONES.**—The production of pulpstones in Canada commenced in 1891 from a quarry near Newcastle, New Brunswick. In 1892 shipments were recorded at 60 tons worth \$900, and since that date pulpstones have been produced almost continuously from New Brunswick quarries. During 1923, a British Columbia deposit was opened up and shipments from this source have reached a grand total of 1,421 tons.

**SHARPENING STONES.**—"There are a large number of fine-grained sandstones and siliceous argillites and mica schists in Canada that are suitable for whetstones, but for a number of years none have been produced other than a small annual output by one or two grindstone producers. There was a large output about a century ago from Whetstone island, Memphremagog lake, in the Eastern Townships of Quebec, and 50 years ago there was a big production annually from Lower Cove, Cumberland county, Nova Scotia.

Scythstones are now produced only by the Read Stone Company from their quarry at Stonehaven, Chaleur bay, New Brunswick. The company has been manufacturing these stones, which are of good quality from a very fine grit and even-textured, blue sandstone since about 1880. The stones which are made in several patterns are shipped under the trade names of "Canada Red end," flat; "Bay of Chaleur" oval; "English round," round tapered; and are packed in boxes containing one-quarter gross. Probably about 1,700 tons of these scythstones have been produced to date, but in recent years the output has been only about 35 tons annually. These stones are nearly all sold in the Canadian markets, but in the past a considerable tonnage of rough blocks was shipped to the United States to be made into scythstones. The "Acme" stone is made from a finer grit quarried at New Bandon. This same stone was at one time shipped as rough blocks for marble polishing. Crude blocks have also in recent years been shipped to the United States from Mic Mac Quarry Company, Nova Scotia, to be made into scythstones, but on account of the brittleness of the sandstone it is mainly used for the large oval-shaped stones. A small quantity of this stone, known as "Brown grit" is used for hand rubbing marble.

#### GENERAL REVIEW

The eight firms reporting under the natural abrasives industry in Canada during 1926 had a total capital investment of \$358,342. Employment was furnished 102 men whose earnings amounted to \$90,069, and fuel and electricity costs totalled \$9,716.

<sup>1</sup>Eardley-Wilmot, V.L.: "Siliceous Abrasives."

**Nova Scotia—DIATOMITE.**—The Canadian production of diatomite has been obtained from deposits in the province of Nova Scotia. In 1896, shipments of diatomite totalling 644 tons were made; this was the first official record of production in Canada. Deposits at Silica lake and near St. Ann's, Cape Breton, have been worked. The total production to date amounts to 11,364 tons valued at \$224,029. Since 1912 the Oxford Tripoli Company has been the only shipper. This company's shipments have been made from deposits located in the vicinity of Silica lake, Colchester county. The diatomite was calcined in rotary furnaces before shipment to a plant at Haverstraw, New York. Development work was carried on during 1926 in connection with a diatomite deposit at East New Annan, Nova Scotia.

**GRINDSTONES.**—At Lower Cove near Joggins and at Minudie, grindstones were produced as early as 1750. Production from these quarries is reported to have been over 4,000 tons annually for a number of years around 1850. In 1873 shipments from Minudie amounted to 1,590 tons and in the following year the output from Lower Cove was 750 tons valued at \$12,000; and from Shore Cove, 350 tons worth \$4,200.

Sandstone deposits near Pietou and Merigomish Harbour were operated between 1840 and 1865. At the present time the Mic Mac Quarry, east of Woodburn, is the only one in the province producing grindstones. This quarry has averaged 300 tons annually since 1913. The majority of the stones are shipped to the United States for saw and machine knife grinding.

Quarry Island has been the scene of operations for 60 years, and during the period 1870 to 1914 a production of 200 tons to 300 tons was recorded annually. However, since that time only a small quantity has been shipped each year.

**New Brunswick.—GRINDSTONES AND PULPSTONES.**—Considerable activity was evidenced in this industry on Grindstone island during the period 1800-1850, but since the latter date no shipments appear to have been made. From 1835 to 1885, a large number of quarries were operated in the southern part of the peninsula, between Petitcodiac and Memramcook rivers. These grindstones were exported mainly to the United States for file and spring grinding purposes. The Beaumont quarry was opened up in this district in 1899 and was closed down in 1919. In 1923, the Rockland quarry situated north of the Beaumont was opened up and since then some experimental shipments have been made.

Grindstone production started at Rockport in 1815. Practically all of the stones cut since 1890 were sent to the Wood Point plant in crude form for finishing. Prior to 1880, a small quantity of grindstones was produced from the sandstone reefs near Wood Point. From 1896 to 1906, production from these quarries ranged between 200 tons and 300 tons annually, which was increased to 800 tons to 1,000 tons during the next ten years. There have been no grindstones produced here since 1918.

In Northumberland county the production of grindstones commenced in 1870. Quarries have been operated at various points near Newcastle, but, with the introduction of Ohio stones on the New England markets operations were curtailed and only the Miramichi, Read and Fish quarries remained active.

*The Miramichi Quarry.*—Sandstones have been extensively quarried on both banks of the Indiantown brook, a tributary of the Southwest Miramichi river, 8 miles southwest of Newcastle. The quarry was first opened up in 1897 for building stone by William Hood; and in 1905 the Miramichi Quarry Company was formed.

The pulpstones which are produced in sizes up to the 5-foot magazine grinders have been used in numerous Canadian pulp mills and have apparently given satisfaction. The company has been a steady producer of pulpstones since 1905. Although the quarry furnishes the largest number of pulpstones in the Dominion, its main output is building stones. The grindstones are suitable for axe and coarse tool grinding, but only a few hundred have been made, mainly between 1918 and 1920.

*The Read Quarry.*—This quarry is situated on the east side of Indiantown brook, directly opposite the workings of the Miramichi Company. The quarry was opened over 40 years ago for building stone; and after being closed for some time was re-opened in 1916 by the Read Stone Company and worked, under the management of Mr. Holt, until 1922.<sup>1</sup>

The Fish quarries commenced operations in 1885 and shipped about 130 tons of grindstones annually for 15 years. From 1891 to 1903, a total of 1,700 tons of pulpstones were produced from these quarries.

<sup>1</sup> Loc. cit.

In the Chaleur bay district operations commenced in 1844 and have been continuous since that date. The major portion of the Canadian production of grindstones during the past 30 years has been obtained from the Stonehaven quarries. Work was started on these quarries in 1863.

Grindstones are made here in all sizes from 8 inches to 7 feet in diameter and 1- to 14-inch face. The smaller stones up to 30 inches in diameter are used by farmers and in lumbering operations. The 30 to 50-inch stones are used in machine shops. The large stones, for which there is now the greater demand are mainly used for grinding edge tools, files, machine knives, saws, scythes, skates, and for granite-cutting. Previous to the introduction of artificial grinding wheels the large stones were also extensively employed for agricultural implement and axe grinding.<sup>1</sup>

New Brunswick grindstone quarries in operation in 1871 employed 200 men earning \$30,635 and made \$40,953 worth of products. In 1881 eight quarries were operated, seven in Gloucester county and one in Westmoreland, with a capital investment of \$10,250; a payroll of 136 men receiving \$20,975 in wages and a production valued at \$30,297. The high record for the industry, according to available information, was reached in 1907 when 4,833 tons were produced. In 1926 only two firms were operating and their total production of grindstones amounted to 1,202 tons.

**Quebec**—GRINDSTONES.—About 1830 the grey sandstones on the east side of Grindstone island, the centre island of the Magdalen group were worked by the French inhabitants and grindstones made for local use.

**Ontario**—GRINDSTONES.—Small grindstones and scythestones have been shipped from sandstone deposits in Clara and Nottawasaga townships. Shipments from the former township were made between 1870 and 1875 and from the latter between 1860 and 1870.

GRINDING PEBBLES.—Grinding pebbles have been obtained for a number of years along the shore of Lake Superior, near Jackfish. During 1920 the production amounted to 560 tons; in 1925 the total was 105 tons; and in 1926 shipments were considerably lower, amounting to only 64 tons.

**CORUNDUM**.—Corundum is found in an area embracing several townships in Renfrew and Hastings counties in the province of Ontario. The industry made its appearance there in 1900 and production reached a maximum in 1906. In 1921, grain corundum amounting to 403 tons valued at \$55,965 was exported to the United States. Since that date no shipments of corundum have been reported.

**GARNETS**.—A deposit of garnets in Ashby township, Ontario, was operated during 1923 and 1,250 tons of garnet concentrates and crude garnets were shipped to Niagara Falls, New York, for use as an abrasive material. In 1924, a shipment of 360 tons of garnets was made but there was no production of this commodity in 1925 and 1926.

**Saskatchewan**—VOLCANIC DUST.—Extensive beds of volcanic dust that occur near Waldeck, 11 miles northeast of Swift Current, were first discovered in 1918. The material has been marketed in the form of cleansers and hand cleaners. Shipments during 1925 amounted to 160 tons valued at \$1,380 and in 1926 a total of 90 tons worth \$630 was shipped.

**British Columbia**—PULPSTONES.—A sandstone quarry situated on Newcastle Island about one mile northeast of Nanaimo commenced shipping pulpstones in 1923. These stones are mainly of smaller sizes, although a few magazine grinders have been produced. The total production of pulpstones from this deposit to date has amounted to over 1,400 tons.

GRINDING PEBBLES.—The Hedley Gold Mining Company used pebbles obtained from Hedley, Similkameen district in 1922. These pebbles were produced at a cost of \$4 per ton as compared with \$35 per ton for the imported Danish.

<sup>1</sup> Loc. cit.

Table 264.—Principal Statistics of the Natural Abrasives Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	4	288,626	58	35,174	4,269	26,052	49,523
1923.....	7	186,994	76	51,774	5,467	19,761	183,333
1924.....	8	156,095	89	65,512	5,260	(a)	139,965
1925.....	8	154,733	62	55,466	5,408	(a)	126,490
1926.....	8	358,342	102	90,069	9,716	(a)	152,433

(a) Data not available.

Table 265.—Capital Employed in the Natural Abrasives Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	82,118	255,730
Cost of supplies and stocks on hand.....	31,182	43,305
Cash, trading and operating accounts and bills receivable.....	41,433	59,307
<b>Total.....</b>	<b>154,733</b>	<b>358,342</b>

Table 266.—Wage-Earners Employed in the Natural Abrasives Industry in Canada, by Months, 1925 and 1926

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	5	15	July.....	121	172
February.....	5	15	August.....	75	145
March.....	15	13	September.....	55	111
April.....	27	29	October.....	41	73
May.....	92	92	November.....	23	52
June.....	123	163	December.....	18	24

Table 267.—Fuel and Electricity Used in the Natural Abrasives Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	475	3,585	663	5,150
Fuel oil..... Imp. gal.	855	140		
Gasoline..... Imp. gal.	260	100		
Wood..... cords	501	1,583	722	2,611
Electric power..... k.w.h.			74,000	1,955
<b>Total.....</b>		<b>5,408</b>		<b>9,716</b>

Table 268.—Power Employed in the Natural Abrasives Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manu- facturers' rating	Number of units	Total h.p. according to manu- facturers' rating
Steam engines and turbines.....	7	255	12	410
Internal combustion engines.....	3	46	1	5
<i>Total primary power.....</i>	<i>10</i>	<i>301</i>	<i>13</i>	<i>415</i>
Electric motors run by purchased power.....			6	241
<b>Total power employed.....</b>	<b>10</b>	<b>301</b>	<b>19</b>	<b>656</b>
Boilers.....	6	275	11	475

Table 269.—Production of Corundum in Canada, 1900-1926

(Short tons)

Year	Corun- dum- bearing rock treated	Grain corun- dum graded	Per cent recovery	Shipments of grain corundum				Average price in cents per pound
				Sold in Canada	Exported	Total ship- ments	Total value	
	Tons	Tons		Tons	Tons	Tons	\$	
1900.....		60		3		3	300	5-00
1901.....	4,134	434	10-7	85	302	387	46,415	5-97
1902.....	7,996	805	10-1	106	662	768	84,465	5-49
1903.....	(a) 8,877	839	9-5	85	618	703	77,510	5-51
1904.....	28,187	1,654	5-9	116	877	993	109,545	5-51
1905.....	23,571	1,681	7-1	140	1,504	1,644	149,153	4-48
1906.....	45,719	2,914	6-4	162	2,112	2,274	204,973	4-50
1907.....	60,532	2,682	4-4	164	1,728	1,892	177,922	4-70
1908.....	2,678	106	4-0	99	990	1,089	100,398	4-60
1909.....	35,894	1,579	4-4	129	1,362	1,491	162,492	5-45
1910.....	37,183	1,686	4-5	106	1,764	1,870	198,680	5-31
1911.....	41,975	1,641	3-9	92	1,380	1,472	161,873	5-50
1912.....	36,879	1,620	4-4	63	1,897	1,960	239,091	6-10
1913.....	12,290	763	6-2	23	1,154	1,177	137,036	5-82
1914.....	12,111	695	5-7	14	534	548	72,176	6-59
1915.....	1,724	116	6-7	21	241	262	33,138	6-33
1916.....	1,864	67	3-6	8	59	67	10,307	7-65
1917.....	4,659	188	4-0	16	172	188	32,153	8-55
1918.....	3,184	137	4-3		137	137	26,112	9-90
1919.....	1,300	26	2-0					
1920.....	(b) 13,025	322	2-5	20	176	196	24,547	6-25
1921.....	(b) 11,256	407	3-6		403	403	55,965	6-94
1922-1926.....								
<b>Total.....</b>	<b>395,038</b>	<b>20,422</b>		<b>1,452</b>	<b>18,072</b>	<b>19,524</b>	<b>2,104,251</b>	

(a) In addition to this amount which was milled in Canada, 267 tons of ore were mined and shipped to the United States for treatment there.

(b) Tailings only.

Table 270.—Production of Diatomite in Canada, 1896-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1896.....	644	9,960	1906.....	30	225	1916.....	620	12,139
1897.....	15	150	1907.....	30	195	1917.....	600	18,000
1898.....	1,017	16,660	1908.....	22	134	1918.....	500	12,500
1899.....	1,000	15,000	1909.....	20	122	1919.....	565	11,300
1900.....	336	1,950	1910.....	38	230	1920.....	260	8,600
1901.....	850	15,300	1911.....	620	12,138	1921.....	341	11,268
1902.....	1,052	16,470	1912.....	650	13,000	1922.....	219	5,781
1903.....	835	16,700	1913.....	317	12,119	1923.....	130	3,250
1904.....	320	6,400	1914.....			1924.....	33	838
1905.....	300	3,600	1915.....			1925-1926.....		
<b>Total.....</b>							<b>11,364</b>	<b>224,629</b>

Table 271.—Production of Grindstones in Canada, by Provinces, 1886-1926

Year	Nova Scotia		New Brunswick		Canada	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1886.....	1,765	24,050	2,255	22,495	4,020	46,545
1887.....	1,710	25,020	3,582	38,988	5,292	64,008
1888.....	1,971	20,400	3,793	30,729	5,764	51,129
1889.....	712	7,128	2,692	23,735	3,404	30,863
1890.....	850	8,536	4,034	33,804	4,884	42,340
1891.....	1,980	19,800	2,499	22,787	4,479	42,587
1892.....	2,462	27,610	2,660	22,226	5,122	49,836
1893.....	2,112	21,000	2,368	15,979	4,480	36,979
1894.....	1,543	15,217	2,124	16,000	3,667	31,217
1895.....	1,400	14,000	1,995	16,652	3,395	30,652
1896.....	1,450	14,500	2,113	17,460	3,563	31,960
1897.....	1,407	17,500	3,065	23,240	4,472	40,740
1898.....	1,422	12,350	3,313	28,240	4,735	40,590
1899.....	1,377	10,300	2,735	24,965	4,112	35,265
1900.....	1,421	12,600	3,758	34,690	5,179	47,290
1901.....	358	3,200	3,676	34,075	4,034	37,275
1902.....	1,074	8,118	3,309	31,900	4,383	40,018
1903.....	1,337	9,562	4,086	36,900	5,423	46,462
1904.....	1,029	7,332	3,480	33,490	4,509	40,822
1905.....	1,020	10,200	4,440	49,700	5,460	59,900
1906.....	1,023	9,680	4,282	48,634	5,305	58,314
1907.....	551	4,480	4,833	54,396	5,384	58,876
1908.....	473	4,803	3,185	37,250	3,658	42,053
1909.....	312	3,204	3,690	43,170	4,002	46,374
1910.....	387	3,496	3,700	38,000	3,787	41,496
1911.....	380	3,382	3,952	43,450	4,332	46,832
1912.....	374	3,760	3,830	42,700	4,204	46,460
1913.....	350	4,900	3,658	40,400	4,008	45,300
1914.....	350	5,270	3,433	43,577	3,783	48,847
1915.....	285	5,300	1,994	26,667	2,279	31,967
1916.....	273	5,800	2,959	44,175	3,232	49,975
1917.....	375	9,875	1,794	28,827	2,169	38,702
1918.....	256	8,000	2,550	62,745	2,806	70,745
1919.....	283	9,000	1,648	47,344	1,931	56,344
1920.....	211	8,440	2,051	65,679	2,262	74,119
1921.....	183	6,990	881	33,647	1,064	40,637
1922.....	102	3,692	735	26,600	837	30,292
1923.....	254	7,906	1,463	43,577	1,717	51,483
1924.....	338	12,525	1,693	56,586	2,931	69,111
1925.....	439	16,723	1,296	45,061	1,735	61,784
1926.....	311	15,136	1,202	43,850	1,513	58,986
<b>Total.....</b>	<b>35,910</b>	<b>440,785</b>	<b>116,506</b>	<b>1,474,390</b>	<b>152,416</b>	<b>1,915,175</b>

Table 272.—Production of Pulpstones, Sharpening Stones, and Polishing Grit in Canada, 1892-1926

Year	Pulpstone		Sharpening stones		Polishing grit	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1892.....	60	900			101	450
1893.....	120	1,400				
1894.....	90	1,500				
1895.....	80	1,280				
1896.....	60	900			90	450
1897.....	100	1,600				
1898.....	200	3,200	33	985		
1899.....	375	7,000	24	1,000		
1900.....	360	6,160				
1901.....	547	8,415				
1902.....	250	4,100				
1903.....	115	1,840				
1904.....	140	1,960				
1905.....	68	1,875	12	600		
1906.....	40	600	18	900		
1907.....			30	1,500		
1908.....	158	4,725	27	1,350		
1909.....	240	6,640	33	1,650		
1910.....	125	3,700	36	1,800	25	200
1911.....	160	3,960	54	2,000	20	150
1912.....	125	4,000	38	1,300	45	330
1913.....	100	3,400	74	2,425	20	200
1914.....	40	4,000	115	1,254	38	403
1915.....			281	3,615	20	186
1916.....			224	2,614	22	193
1917.....	47	2,750	307	4,302		
1918.....	180	8,400	56	3,500	30	360
1919.....	14	20	45	3,392	30	360
1920.....	125	10,000	56	3,987	1	30
1921.....	200	22,000	17	1,430		
1922.....	150	12,000	18	1,450		
1923.....	260	25,100	35	3,500		
1924.....	624	58,113	36	3,600		
1925.....	781	57,781	46	4,600		
1926.....	1,155	89,541	27	2,700		
Total.....	7,089	359,260	1,642	55,454	442	3,312

Table 273.—Production of Grindstones, Pulpstones and Scythestones, by Provinces, in Canada, 1924-1926

Province	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Nova Scotia.....	338	12,525	439	16,723	311	15,136
New Brunswick.....	2,113	99,299	1,642	79,661	1,684	90,975
British Columbia.....	240	19,000	481	27,781	700	45,116
Total.....	2,691	130,824	2,562	124,165	2,695	151,227

Table 274.—Imports into Canada and Exports of Abrasives, 1924-1926

Item	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>IMPORTS—</b>		\$		\$		\$
Abrasives—						
Artificial abrasives in bulk, crushed or ground, when imported for use in the manufacture of abrasive wheels and polishing composition.....		125,303		123,651		230,933
Carborundum wheels or stones not further manufactured than moulded and burned.....		64,351				158,448
Diamond dust or bort, and black diamonds for borers.....		399,835		694,405		963,141
Emery in bulk, crushed or ground.....		53,208		223,598		53,384
Emery wheels and carborundum wheels, n.o.p.....		76,971		198,432		77,331
Emery or carborundum, manufactures of, including carborundum stones, n.o.p.....		63,019		59,775		67,710
Grindstones, not mounted, and not less than 36 inches in diameter.....		578,221		641,369		791,412
Grindstones, n.o.p.....		15,449		19,983		36,838
Pumice and pumice stone, lava and calcareous tufa, not further manufactured than ground.....		28,127		27,581		32,005
Sand paper, glass, flint and emery paper or emery cloth.....		279,586		305,042		344,987
Iron sand or globules for polishing and sawing.....		17,985		11,702		17,464
Burrstones in blocks, rough or unmanufactured, not bound up or prepared for binding into mill-stones..... No.	145	791	5	584	3	450
<b>Total.....</b>		<b>1,702,846</b>		<b>2,306,122</b>		<b>2,774,103</b>
<b>EXPORTS—</b>						
Grindstones, manufactured.....		49,630		61,429		75,374
Stone for the manufacture of grindstones..... tons	120	1,080	93	794		
Abrasives—						
Natural, n.o.p..... cwt.	5,756	10,321	464	464	860	860
Artificial, crude, including carborundum..... cwt.	790,983	2,587,350	955,184	2,978,639	1,055,592	2,908,320
Artificial, made up into wheels, stones, etc.....		13,264		32,030		45,802
<b>Total.....</b>		<b>2,661,645</b>		<b>3,073,356</b>		<b>3,030,356</b>

## ASBESTOS

**Canada.**—Asbestos was discovered in the Des Plantes river region, between St. Joseph and St. Francis villages, Quebec, about 1862. Exploitation of these deposits was found however, to be unprofitable owing to their limited character.

The next discovery of asbestos was made in the district of Thetford and Coleraine in 1877. In the following year mining was commenced on a small scale and some fifty tons were produced. The fibre produced was excellent but it was difficult to find a market.

In the course of the next twelve years developments in the industry were rapid. Seven quarries were in operation in 1885 and the exports during that year totalled 2,440 tons. First quality asbestos sold for \$80 per ton; however, a gradual increase in price was recorded and in 1900 when the total production was 29,141 tons this grade brought \$300 per ton. Production in 1910 advanced to 102,215 tons; employees numbered 3,693 with total wages of \$1,528,544. In 1920, there were 18 mines in operation, the quantity sold was 199,573 tons valued at \$14,792,201 employees totalled 3,572 and wages paid were \$4,765,305.

The 1926 shipments amounted to 279,403 tons with a valuation of \$10,099,423. Asbestos rock mined during the year totalled 4,483,375 tons, of which quantity 4,002,626 tons were handled by the mills.

Exports of asbestos (including sand and waste) in 1926, totalled 277,991 tons, or 19,974 tons in excess of the tonnage exported in 1925. Shipments to Great Britain amounted to 9,304 tons, to the United States 224,334 tons, and to Germany, 14,193 tons. Exportations of asbestos to Australia, Belgium and France increased materially.

Production of asbestos in South Africa and Cyprus increased in 1926; the former country shipping 14,096 tons and the latter, 6,941 tons. The Rhodesian output declined from 34,349 tons in 1925 to 33,344 tons in 1926. Mine operators in the United States shipped 1,358 tons during the year under review.

In the asbestos mining industry in Canada in 1926 the capital employed by the eight producing firms was reported at \$34,905,096. Employment was furnished 141 salaried employees, 1,521 mine workers and 1,135 mill workers; their combined earnings amounted to \$3,544,097. A ten hour day was usual throughout most of the field. Fuel and electricity cost \$1,012,232, including \$600,860 for 64,462,880 kilowatt hours of electricity. The 409 electric motors in use during the year had a total rating of 28,133 h.p.

Eight plants in Canada manufacture asbestos products including the following commodities; asbestos paper and mill board; asbestos roofing of all kinds; asbestos rigid shingles; asbestos building materials; asbestos cellular, and sponge-felted pipe insulation; insulating sheets and blocks; asbestos brake linings and clutch facings (woven on special looms); and asbestos packings for steam, oil and hydraulic operations.

The eastern townships area in the province of Quebec supplies about 85 per cent of the world's production of asbestos. Rhodesia, the second producer, markets only the longer fibre stocks, and is therefore an important competitor, as Canadian mines ship both long and short fibre. The Union of South Africa and Russia have also become more important sources of supply, particularly to European markets. In South Africa, the Transvaal production consists principally of chrysotile, although small quantities of amosite (long fibre), and crocidolite (blue) are also produced; the Cape production is exclusively crocidolite. Cyprus, Italy, the United States, China and Australia also produce small tonnages of asbestos.

One of the most valuable developments in the asbestos industry was brought about by the incorporation of a new company which merged many of the segregated operators in Quebec. The Asbestos Corporation, Ltd., obtained a federal charter in November, 1924, under which it acquired control of the following companies: Asbestos Corporation of Canada, Limited; Consolidated Asbestos Limited (owning the Thetford, Belmina, and Berlin mines); Federal Asbestos Company Limited; Asbestos Mines, Ltd., Thetford-Vimy Limited; Maple Leaf Asbestos Corporation, Limited; and the Black Lake Asbestos and Chrome Company, Limited. The provisions of this charter, which became operative on January 1, 1926, give the company power to conduct operations throughout Canada.

Table 275.—Production of Asbestos in Canada, 1880-1926

Year	Short tons	Value	Year	Short tons	Value	Year	Short tons	Value
		\$			\$			\$
1880*.....	380	24,700	1897.....	30,442	445,368	1913.....	161,086	3,849,925
1881*.....	540	35,100	1898.....	23,785	491,197	1914.....	117,573	2,909,806
1882*.....	810	52,650	1899.....	25,536	485,849	1915.....	136,842	3,574,985
1883*.....	955	68,750	1900.....	29,141	748,431	1916.....	154,149	5,228,869
1884*.....	1,141	75,097	1901.....	40,217	1,259,759	1917.....	153,781	7,230,383
1885*.....	2,440	142,441	1902.....	40,416	1,148,319	1918.....	158,259	8,970,797
1886*.....	3,458	206,251	1903.....	41,677	929,757	1919.....	159,236	10,975,369
1887.....	4,619	226,976	1904.....	48,465	1,226,352	1920.....	199,573	14,792,201
1888.....	4,404	255,007	1905.....	68,263	1,503,259	1921.....	92,761	4,906,230
1889.....	6,113	426,554	1906.....	82,185	2,060,143	1922.....	163,706	5,552,723
1890.....	9,860	1,260,240	1907.....	90,426	2,505,042	1923.....	231,482	7,522,506
1891.....	9,279	999,878	1908.....	90,773	2,573,335	1924.....	225,744	6,710,830
1892.....	6,082	390,462	1909.....	87,300	2,301,775	1925.....	273,524	8,977,546
1893.....	6,331	310,156	1910.....	102,215	2,573,603	1926.....	279,403	10,099,423
1894.....	7,630	420,825	1911.....	127,414	2,943,108			
1895.....	8,756	368,175	1912.....	136,301	3,137,279	<b>Total.....</b>	<b>3,656,723</b>	<b>133,327,287</b>
1896.....	12,250	429,856						

Table 276.—Output and Shipments of Canadian Asbestos, 1925 and 1926

Classification	1925				1926			
	Total output	Sold or shipped			Total output	Sold or shipped		
		Quantity	Total sales value at mill	Average value per ton		Quantity	Total sales value at mill	Average value per ton
	Tons	Tons	\$	\$ cts.	Tons	Tons	\$	\$ cts.
Crude No. 1.....	806	1,046	381,926	365 13	842	1,108	410,373	370 37
Crude No. 2.....	2,701	3,777	778,895	206 22	2,952	3,494	802,304	229 62
Other crudes.....	260	348	49,030	140 90	328	446	92,394	207 16
Spinning stocks.....	13,509	16,070	1,710,379	106 43	13,839	15,182	1,885,835	124 21
Shingle stocks.....	25,301	30,010	1,523,980	50 78	39,678	36,497	2,139,780	58 62
Mill board and paper stocks.....	94,350	93,935	2,915,046	31 03	101,293	86,746	2,940,675	33 89
Fillers, floats and other short fibres.....	128,382	128,338	1,618,290	12 61	141,272	135,930	1,828,062	13 44
<b>Total.....</b>	<b>265,309</b>	<b>273,524</b>	<b>8,977,546</b>	<b>32 82</b>	<b>300,204</b>	<b>279,403</b>	<b>10,099,423</b>	<b>36 15</b>
Sand and gravel*.....	16,409	16,865	10,814	0 64	15,672	15,672	10,257	0 65
<b>Grand Total.....</b>	<b>281,718</b>	<b>290,389</b>	<b>8,988,360</b>	<b>30 95</b>	<b>315,876</b>	<b>295,075</b>	<b>10,109,680</b>	<b>34 26</b>

\* In 1926, this production has been included under the "Sand and Gravel Industry."

Table 277.—Imports of Asbestos into Canada, 1924-1926

Item	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Asbestos in any form other than crude, and all manufactures of, n.o.p.....		441,300		350,600		472,513
Asbestos packing.....	111	98,418	111	98,169	93	93,122
<b>Total.....</b>		<b>539,718</b>		<b>448,769</b>		<b>565,635</b>

Table 278.—Exports of Canadian Asbestos by Countries of Destination, 1924-1926

Commodity and Destination	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>ASBESTOS—</b>						
Great Britain.....	6,614	374,680	6,846	608,774	7,710	575,866
United States.....	72,233	3,904,161	94,292	4,979,303	92,897	5,295,168
Australia.....	473	24,130	1,360	94,272	1,605	116,250
Belgium.....	2,798	150,065	6,002	370,530	10,033	628,981
France.....	5,640	452,151	5,484	438,195	6,860	481,145
Germany.....	9,133	785,703	8,947	737,802	12,537	900,104
Italy.....	2,439	151,778	3,730	260,263	3,671	242,482
Japan.....	9,222	358,596	7,127	373,312	4,518	250,714
Netherlands.....	1,068	88,580	2,707	212,855	1,723	167,050
Spain.....			130	7,800		
Other countries.....	110	7,975	125	7,000	206	12,050
<b>Total.....</b>	<b>109,730</b>	<b>6,297,819</b>	<b>136,750</b>	<b>8,090,106</b>	<b>141,760</b>	<b>8,669,810</b>
<b>SAND AND WASTE—</b>						
Great Britain.....	3,100	53,983	1,863	34,490	1,594	35,767
United States.....	89,582	1,123,231	115,587	1,490,341	131,437	1,889,003
Other countries.....	2,337	42,056	3,817	67,455	3,200	67,710
<b>Total.....</b>	<b>95,019</b>	<b>1,219,270</b>	<b>121,267</b>	<b>1,592,286</b>	<b>136,231</b>	<b>1,992,480</b>
<b>ASBESTOS MANUFACTURES INCLUDING ASBESTOS ROOFING—</b>						
Great Britain.....		1,007		272		4,793
United States.....		30,272		32,443		19,118
British South Africa.....				5,855		
France.....		32		205		
New Zealand.....		125		31		1,247
Other countries.....		12,696		16,766		17,853
<b>Total.....</b>		<b>44,132</b>		<b>55,572</b>		<b>43,011</b>

Table 279.—Monthly Average Prices of Asbestos by Grades, 1925 and 1926

(Per short ton)

(Computed from quotations in the *Engineering and Mining Journal*)

Month	Crude No. 1	Crude No. 2	Spin-ning fibres	Magnesia and compressed sheet fibres	Shingle stock	Paper stock	Paper fillers	Cement stock	Short fibres	Floats	Sand
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1925											
January.....	363	195	108	78	50	38	.....	20	.....	11	7
February.....	363	225	125	83	50	38	.....	20	.....	11	7
March.....	388	238	137	83	50	38	.....	20	.....	11	7
April.....	400	275	158	90	60	38	.....	20	.....	11	7
May.....	410	265	152	90	60	38	.....	20	.....	11	7
June.....	413	263	150	90	60	38	.....	20	.....	11	7
July.....	450	263	155	90	63	38	20	10	.....	11	7
August.....	450	273	161	98	65	39	20	11	.....	10	7
September.....	425	275	163	93	63	40	20	10	.....	10	7
October.....	425	275	143	93	63	40	25	10	.....	10	7
November.....	450	275	175	125	60	40	.....	25	12	.....	.....
December.....	475	288	188	125	70	43	.....	25	14	.....	.....
Average.....	418	259	151	95	60	39	21	18	13	11	7
1926											
January.....	500	300	190	125	73	42	.....	25	15	15	.....
February.....	525	313	183	137	70	43	.....	25	15	15	.....
March.....	525	300	190	137	70	43	.....	25	15	15	.....
April.....	525	300	190	137	70	43	.....	25	15	15	.....
May.....	525	300	190	137	70	43	.....	25	15	15	.....
June.....	525	300	190	137	70	43	.....	25	15	15	.....
July.....	525	300	190	137	70	43	.....	25	15	15	.....
August.....	525	300	190	137	70	43	.....	25	15	15	.....
September.....	525	300	190	137	70	43	.....	25	15	15	.....
October.....	525	300	190	137	70	43	.....	25	15	15	.....
November.....	525	300	190	137	70	43	.....	25	15	15	.....
December.....	525	300	190	137	80	43	.....	25	15	15	.....
Average.....	523	301	190	136	71	43	..	25	15	15	.....

Table 280.—Principal Statistics of the Asbestos Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	12	43,997,252	2,572	2,581,644	*265,962	2,704,462	5,552,723
1923.....	14	42,715,557	3,165	3,607,178	920,826	2,524,610	7,522,506
1924.....	15	43,216,966	2,597	2,977,304	760,046	2,173,991	6,710,830
1925.....	14	38,133,046	2,582	2,997,107	923,239	(a)	8,988,360
1926.....	8	34,905,096	2,797	3,544,097	1,012,232	(a)	10,109,680

\*Fuel only.  
(a) Data not available.

Table 281.—Capital Employed in the Asbestos Industry in Canada, 1924-1926

	1924	1925	1926
	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—			
Cost of lands, buildings, machinery and tools.....	37,286,894	33,066,779	30,343,961
Cost of supplies and stocks on hand.....	2,437,151	1,907,037	2,117,598
Cash, trading and operating accounts and bills receivable.....	3,492,921	3,159,210	2,443,537
Total.....	43,216,966	38,133,046	34,905,096

Table 282.—Employees, Salaries and Wages in the Asbestos Industry in Canada, 1925 and 1926

	1925				1926			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
Salaried Employees.....	107	10	117	280,085	129	12	141	328,813
Wage-Earners—								
Mine.....	1,315		1,315	2,717,022	1,521		1,521	3,215,284
Mill.....	1,150		1,150		1,135		1,135	
Total.....	2,465		2,465	2,717,022	2,656		2,656	3,215,284
Grand total.....	2,572	10	2,582	2,997,107	2,785	12	2,797	3,544,097

Table 283.—Wage-Earners in the Asbestos Industry in Canada by Months, 1925 and 1926

Month	1925		1926		Month	1925		1926	
	Mine	Mill	Mine	Mill		Mine	Mill	Mine	Mill
January.....	1,055	1,004	1,256	873	July.....	1,267	1,184	1,518	1,109
February.....	1,018	1,027	1,410	1,153	August.....	1,326	1,197	1,556	1,099
March.....	1,051	1,033	1,463	1,123	September.....	1,288	1,194	1,597	1,148
April.....	1,063	1,035	1,410	1,124	October.....	1,342	1,233	1,601	1,188
May.....	1,054	1,068	1,535	1,161	November.....	1,389	1,272	1,625	1,217
June.....	1,213	1,170	1,558	1,130	December.....	1,323	1,223	1,530	1,178

Table 284.—Fuel and Electricity Used in the Asbestos Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	10,751	78,072	15,397	104,518
Bituminous coal..... tons	34,993	256,945	44,590	282,816
Coke..... tons	4,267	41,897	2,128	23,888
Wood..... cords	50	150	50	150
Electric power..... k.w.h.	60,506,285	546,175	64,462,880	600,860
Total.....		923,239		1,012,232

Table 285.—Power Employed in the Asbestos Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	2	750	4	1,050
Internal combustion engines.....	1	6	1	6
Total primary power.....	3	756	5	1,056
Electric motors run by purchased power.....	402	28,121	404	27,433
Total power employed.....	405	28,877	409	28,489
Electric motors run by primary power in same plant.....	4	500	5	700
Total electric motors.....	406	28,621	409	28,133
Boilers.....	17	1,720	18	1,820

Table 286.—\*World Production of Asbestos, 1913 and 1922-1926

(Long tons)

Country	1913	1922	1923	1924	1925	1926
<b>British Empire—</b>						
Canada <sup>1</sup> .....	118,361	146,166	206,680	201,557	259,275	249,467
Southern Rhodesia <sup>2</sup> .....	259	12,722	18,182	23,340	30,669	29,771
Union of South Africa <sup>2</sup> .....	859	3,919	7,312	6,459	9,078	12,586
Australia <sup>2</sup> .....		741	217	74	51	109
Cyprus <sup>2</sup> (exports).....	1,168	2,285	2,151	3,903	3,221	6,197
India <sup>2</sup> .....		242	247	125	16	18
<b>Total.....</b>	<b>120,647</b>	<b>166,075</b>	<b>234,789</b>	<b>235,458</b>	<b>302,310</b>	<b>298,148</b>
<b>Foreign Countries—</b>						
China <sup>2</sup> .....		194	126	125	213	(a)
Finland <sup>2</sup> .....		772	774	1,207	1,700	2,063
Italy <sup>2</sup> .....	172	492	1,513	2,125	2,071	2,500
Russia <sup>2</sup> .....	17,218	5,065	4,801	8,197	10,000	18,000
Spain <sup>2</sup> .....		5				
United States <sup>3</sup> .....	982	60	202	268	1,123	1,212
France <sup>2</sup> .....		600	653	868	654	600
Japan <sup>2</sup> .....		919	369	277	1,155	(a)
<b>Total.....</b>	<b>18,372</b>	<b>8,107</b>	<b>8,438</b>	<b>13,067</b>	<b>16,916</b>	<b>24,375</b>
<b>Grand total.....</b>	<b>139,019</b>	<b>174,182</b>	<b>243,227</b>	<b>248,525</b>	<b>319,226</b>	<b>322,523</b>

\*Source—

<sup>1</sup>Dominion Bureau of Statistics, Canada.<sup>2</sup>Prior to 1923 Imperial Institute publications, later, figures from official reports of the different countries.<sup>3</sup>Mineral Resources of the United States.

(a) Data not available.

## FELDSPAR

**Canada.**—The first record of production in the feldspar industry in Canada dates back to about the year 1890. The production during that year was approximately 700 tons and since that date an increase has been recorded until in 1924 the maximum output for the industry, namely, 44,804 tons, was produced.

The initial development work in this industry was made on deposits located in Villeneuve, Templeton and Hull townships, in the province of Quebec. In the townships of Bedford and Portland, Ontario, near Bedford and Verona, development work was started on large feldspar deposits in the year 1900. From December, 1900, to March, 1901, shipments from this district amounted to 4,000 tons, all of which were made to the United States for consumption in the pottery industry. The activities of these Ontario feldspar properties during the next few years, owing to their proximity to the United States market (potteries located in New Jersey), were responsible for the almost complete cessation of work on Quebec deposits.

Small quantities of feldspar were produced in Quebec from 1909 to 1915, while during that period Ontario deposits shipped amounts varying from 12,686 tons to 17,962 tons. In 1916, the Quebec production rose to 4,610 tons, there was a considerable falling off during the following four years, however from 1921 to 1926 shipments have been large ranging from a minimum of 9,737 tons in 1921 to a maximum of 16,147 tons in 1924. Dental spar has been produced in small quantities from the Villeneuve quarry in Portland township, Quebec, for a number of years.

Ontario producers during the period 1901 to 1926, inclusive, contributed 83 per cent of the total Canadian production. The minimum output for the period was in 1901 when 4,816 tons were shipped; the high mark of 37,224 tons was reached in 1920.

Feldspar production in Canada advanced 25.3 per cent in quantity in 1926 to a total of 35,951 tons as compared with 28,681 tons produced in 1925. The value of the shipments during the year was \$310,238 or \$8.63 per ton.

Exports of feldspar during 1926 were recorded at 33,016 tons invoiced at \$251,551. In 1925 exportations were considerably lower, amounting to 28,659 tons evaluated at \$209,164.

Customs' records showed imports of feldspar at 2,314 tons, at 47·3 per cent increase over the figures of 1,570 tons for the previous year.

A resumé of the feldspar situation in the United States is quoted below from the *Engineering and Mining Journal*:—

Competition has increased. Price cutting continued throughout 1926, and the year throughout witnessed a "buyer's market". As a partial offset to this, an increasing number of consumers have seen the evils resulting from the sacrifice of quality to price and have been willing to pay for a better article. Some are now requiring an analysis and a screen test with each car. It is believed that this tendency will increase further. The average quality of spar sold has been improved. This seems to be a natural result in a highly competitive market.

Plants for the fine-grinding of feldspar in Canada are located at Kingston, Toronto and Oshawa; the first two establishments were operated during 1926 producing about 2,400 tons of ground spar. The grinding capacity of these two plants is approximately 7,500 tons per annum.

Although feldspar occurs in many deposits throughout Canada, operations in this industry in 1926 were confined to the provinces of Ontario and Quebec. With the exception of some 2,400 tons used for domestic purposes, the entire Canadian output was shipped to United States grinding plants in the form of crude spar for use in the ceramic industry.

The total capital employed by the 29 firms operating in this industry was reported at \$582,350. Employment statistics showed 13 salaried employees and 397 wage-earners on the payroll during the year; their earnings totalled \$213,571. Fuel used by the operators in 1926 cost \$14,654.

Table 287.—Production of Feldspar in Canada, by Provinces, 1890-1926

Year	Quebec		Ontario		Canada	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1890.....	700	3,500			700	3,500
1891.....	685	3,425			685	3,425
1892.....	175	525			175	525
1893.....	575	4,525			575	4,525
1894.....						
1895.....					1,018	*2,545
1896.....	972	2,583			972	2,583
1897.....	1,400	3,290			1,400	3,290
1898.....	2,500	6,250			2,500	6,250
1899.....	3,000	6,000			3,000	6,000
1900.....	155	542	163	570	318	1,112
1901.....	534	1,068	4,816	9,632	5,350	10,700
1902.....			7,576	15,152	7,576	15,152
1903.....	18	32	13,910	18,934	13,928	18,966
1904.....			11,083	22,166	11,083	22,166
1905.....			11,700	23,400	11,700	23,400
1906.....			16,948	40,890	16,948	40,890
1907.....			12,584	29,819	12,584	29,819
1908.....			7,877	21,099	7,877	21,099
1909.....	97	1,719	12,686	38,664	12,783	40,383
1910.....	90	1,800	15,719	45,867	15,809	47,667
1911.....	17	255	17,706	51,684	17,723	51,939
1912.....	100	2,000	13,633	28,916	13,733	30,916
1913.....	74	1,554	16,716	59,241	16,790	60,795
1914.....	98	2,156	17,962	68,668	18,060	70,824
1915.....	572	2,005	13,987	55,796	14,559	57,801
1916.....	4,610	18,075	14,878	53,332	19,488	71,407
1917.....	1,188	8,204	18,274	81,622	19,462	89,826
1918.....	191	4,279	18,591	108,449	18,782	112,728
1919.....	925	13,073	13,754	73,158	14,679	86,231
1920.....	649	10,052	37,224	270,843	37,873	280,895
1921.....	9,737	80,180	20,115	150,457	†29,868	†230,754
1922.....	12,472	127,826	15,255	120,576	27,727	248,402
1923.....	12,026	102,779	17,199	134,822	29,225	237,601
1924.....	16,147	142,118	28,657	216,422	44,804	358,540
1925.....	11,287	94,730	17,394	141,059	28,681	235,789
1926.....	13,168	111,136	22,783	199,102	35,951	310,238
<b>Total.....</b>	<b>94,162</b>	<b>755,681</b>	<b>419,190</b>	<b>2,080,340</b>	<b>514,386</b>	<b>2,838,683</b>

\*Exports.

†Includes Nova Scotia production—16 tons valued at \$117.

Table 288.—Production in Canada, Imports and Exports of Feldspar, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Quebec.....	16,147	142,118	11,287	94,730	13,168	111,136
Ontario.....	28,657	216,422	17,394	141,059	22,783	199,102
<b>Total</b> .....	<b>44,804</b>	<b>35,8540</b>	<b>28,681</b>	<b>235,789</b>	<b>35,951</b>	<b>310,238</b>
IMPORTS.....	1,921	37,845	1,570	31,114	2,314	43,040
EXPORTS.....	37,869	274,681	28,659	209,164	33,016	251,551

Table 289.—Principal Statistics of the Feldspar Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	25	388,310	225	127,182	*5,231	60,829	248,402
1923.....	25	948,973	298	193,001	13,965	55,542	237,601
1924.....	25	953,525	290	223,937	16,866	(a)	358,540
1925.....	23	712,329	240	165,766	11,141	(a)	235,789
1926.....	29	582,350	410	213,571	14,654	(a)	310,238

\*Fuel only.  
(a) Data not available.

Table 290.—Capital Employed in the Feldspar Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY:—		
Cost of lands, buildings, machinery and tools.....	648,400	511,416
Cost of supplies and stocks on hand.....	18,430	37,550
Cash, trading and operating accounts and bills receivable.....	45,499	33,354
<b>Total</b> .....	<b>712,329</b>	<b>582,350</b>

Table 291.—Employees, Salaries and Wages in the Feldspar Industry in Canada, 1925 and 1926

	1925				1926			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
Salaried employees.....	11		11	19,507	12	1	13	18,450
Wage earners.....	229		229	146,259	397		397	195,121
<b>Total</b> .....	<b>240</b>		<b>240</b>	<b>165,766</b>	<b>409</b>	<b>1</b>	<b>410</b>	<b>213,571</b>

Table 292.—Wage-Earners in the Feldspar Industry in Canada, by Months, 1925 and 1926

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	153	283	July.....	197	311
February.....	204	261	August.....	188	337
March.....	214	223	September.....	158	250
April.....	127	170	October.....	182	304
May.....	177	167	November.....	211	251
June.....	211	288	December.....	173	233

Table 293.—Fuel and Electricity Used in the Feldspar Industry in Canada, 1925-1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	865	7,073	935	8,444
Fuel oil..... Imp. gal.	634	140		
Gasoline..... Imp. gal.	4,686	1,252	7,546	2,357
Wood..... cords	767	2,676	917	3,853
<b>Total.....</b>		<b>11,141</b>		<b>14,654</b>

Table 294.—Power Employed in the Feldspar Industry in Canada, 1925-1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	9	360	6	248
Internal combustion engines.....	4	67	5	95
<i>Total primary power.....</i>	<i>13</i>	<i>427</i>	<i>11</i>	<i>343</i>
Boilers.....	10	327	12	433

Table 295.—\*World Production of Feldspar, 1913 and 1922-1926

(Long Tons)

Country	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE</b>						
United Kingdom (b).....	66,626	39,751	54,589	55,756	57,379	47,769
Canada.....	14,991	24,756	26,094	40,003	25,608	32,099
Australia.....		85	33	15	32	114
Union of South Africa.....						99
Total.....	81,617	64,592	80,716	95,774	83,019	80,081
<b>FOREIGN COUNTRIES</b>						
Finland.....		1,301	778	659	788	595
Germany (Bavaria).....	(a)	5,982	8,851	32,605	10,093	6,553
Italy.....		2,745	4,989	3,200	2,500	5,783
Japan.....	(a)	15,802	22,571	23,050	18,743	(a)
Norway (Exports).....	40,186	11,643	12,863	20,530	26,355	20,180
Rumania.....						1,662
Sweden.....	37,269	22,010	16,008	18,999	26,321	33,000
United States.....	107,996	117,127	145,004	204,772	185,706	209,988
Total.....	185,451	176,610	211,064	303,815	270,506	277,761
<b>Grand total.....</b>	<b>267,068</b>	<b>241,202</b>	<b>291,780</b>	<b>399,589</b>	<b>353,525</b>	<b>357,842</b>

\* Source—

Prior to 1925 Imperial Institute publications. Data for 1925 and 1926 obtained directly from statistical bureaus of the different countries.

(a) Data not available.

(b) Including China Stone

## GRAPHITE

**Canada.**—The first operations in the graphite industry in Canada were carried on in the province of Quebec in 1846, when a deposit of crystalline graphite was worked in Grenville township. During 1869 an estimated value of \$72,000 was placed on shipments of graphite from New Brunswick and Quebec. Ten years later exports from Canada were valued at \$1,167. The demand for Canadian graphite during the war years had its peak in 1916 and the production in that year amounted to 3,955 tons valued at \$325,362. The six plants in operation employed 344 men, whose wages totalled \$191,876. Although the 1917 tonnage was 241 tons less than that of the preceding year, the value received by the operators was considerably higher, the total being \$402,892. No. 1 flake graphite sold for an average of \$293.80 per ton in 1917; No. 2 flake, \$153.26 per ton; and amorphous and dust, \$57.30 a ton. During 1926 shipments of graphite were reported by three producers, their total production amounting to 2,727 tons worth \$194,860.

Exports of graphite, crude or refined, in 1926, according to Custom's records, totalled 2,564 tons appraised at \$180,851 as compared with 2,484 tons at \$135,897 exported in 1925.

The following information, regarding prices and markets, has been abstracted from the *Engineering and Mining Journal*:—

Prices—F.O.B. New York, per pound—

Ceylon lump, 8 to 9 cents; chip, 7 to 8 cents; dust, 3 to 6 cents; Madagascar flake,  $6\frac{1}{2}$  to 7 cents.

High-grade, finely ground, 12 cents up; medium grade, 8 cents up. No. 1 flake, 10 cents up; fine flake, 9 cents up. Foundry facings, 4 cents up. Amorphous, fine ground, 4 cents up; fine ground crystalline, 7 to 12 cents. Crude amorphous graphite, \$15 to \$35 per ton, according to grade.

In Ceylon the graphite industry has been declining; many mines have been closed down and others are marking time. The reason for this is the substitution of the electric furnace for the crucible both in steel and brass plants and also the use of larger amounts of Madagascar graphite and proportionally less Ceylon material in the manufacture of crucibles.

Madagascar and Ceylon continue to be the two chief sources outside of North America, though there are several countries where low-grade material is mined for local uses. The best samples of the minor regions are the Pinerolo district of north Italy and the nearby Briançon district of southern France. The product contains about 60 per cent carbon and is used mainly for foundry facings.

**New Brunswick.**—The deposits of amorphous graphite at Split Rock and Marble Cove, Lancaster parish, St. John county, New Brunswick, were worked as early as 1853; the output for that year being 45 tons. These workings were inactive until 1868 when they were re-opened. In 1869 the production of graphite in New Brunswick was valued at \$12,000; the value of plant and machinery was placed at \$700; and there were 10 men employed. From 1885 to 1888 the annual production ranged from 100 tons to 400 tons. Operations on a deposit at Marble Cove were commenced by the Canada Paint Company in 1895 and continued until 1908; the annual output amounting to 100 tons. There has been no production of graphite in New Brunswick since that date.

**Quebec.**—Operations in the graphite industry in Quebec date back to 1846 when a deposit was opened up in Grenville township. During the three-year period 1869-1871, a property in Buckingham township was operated with an average production of 450 tons; employment was furnished 18 men during this period. From 1888 to 1899, operations were carried on intermittently in Buckingham township, however, from that date to 1906 little work was done on these deposits. In 1916, mills at Buckingham and St. Rémi d'Amherst shipped 479 tons. During 1925, three Quebec companies reported a total production of 359 tons and in 1926 the two operators produced 326 tons.

**Ontario.**—Mining and milling of graphite in Ontario had its inception in 1870 when the Port Elmsley deposit was opened up and the Oliver's Ferry refining plant was constructed. A deposit in Bedford township was operated prior to 1890 and a small quantity of crystalline graphite was produced. In 1896 another producer commenced operations, namely, the Black Donald Company. This deposit is located near Calabogie in Renfrew county and is the largest and richest body of graphite known in North America. Operations have been practically continuous since the opening up of this property. The graphite is shipped as a refined product, the higher grades which are used in lubricating compounds, being 90 to 99 per cent pure. These products are used principally in lubricants, foundry facings, stove polishes and in the manufacture of paints for iron and steel structural work. In 1919 the N. A. Timmins deposit in North Burgess township was opened up. The Ontario production in 1925 of 2,210 tons came from three deposits; the Black Donald, the Globe, and the Timmins, however, in 1926 only the first named was in operation.

**Baffin Island.**—Graphite has been recorded from time to time as being found at various localities on Baffin island. Thus, R. Bell records the receiving of specimens at Black Lead island, Cumberland Sound, in 1897, and in 1885 from Eskimos at Ashe inlet, on Big Island. In the latter case, the specimens are said to have come from a point east of Big island, and were possibly found in the neighbourhood of Lake Harbour. A. P. Low, also, mentions veins of graphite occurring south of Port Burwell, on the east shore of Ungava bay, and near Cape Wolstenholme, as well as on the east side of Baffin island.

In 1916, the Hudson Bay Company commenced the development of a graphite deposit near Lake Harbour on the south shore of Baffin island, behind Big island, and in 1917 and 1918 shipped out a small tonnage. The graphite is of crystalline or vein variety, and requires only to be hand cobbled in order to fit it for market. The veins, of which several have been worked, occur in crystalline limestone, probably of Grenville age, on its contact with intrusive quartz dikes. The graphite secured was shipped to a crucible firm, who report its quality as equal to the best grade of Ceylon plumbago.\*

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\*Extract from "Graphite" by Hugh S. Spence.

Table 296.—Production of Graphite in Canada, by Provinces, 1886-1926

Year	New Brunswick		Quebec		Ontario		Canada	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
1886.....	500	4,000					500	4,000
1887.....	300	2,400					300	2,400
1888.....	150	1,200					150	1,200
1889.....	200	1,600	42	1,560			242	3,160
1890.....	150	1,200	25	4,000			175	5,200
1891.....	260	1,560					260	1,560
1892.....			167	3,763			167	3,763
1893.....								
1894.....			5	400			5	400
1895.....	150	900	70	5,250			220	6,150
1896.....	45	315	94	9,140	650	13,000	789	22,455
1897.....	89	890	247	12,350	100	3,000	436	16,240
1898.....	260	2,600	100	5,098	300	6,000	660	13,698
1899.....			90	8,000	1,220	16,179	1,310	24,179
1900.....	120	1,440	302	5,600	1,500	24,000	1,922	31,040
1901.....	240	2,880	220	4,400	1,750	31,500	2,210	38,780
1902.....	200	2,400	100	10,000	795	15,900	1,095	28,300
1903.....					728	23,745	728	23,745
1904.....	60	480	25	2,300	367	8,980	452	11,760
1905.....	60	480			481	10,255	541	16,735
1906.....			125	8,300	202	10,000	387	18,300
1907.....			120	5,000	459	11,000	579	16,000
1908.....	40	360	1	165	210	5,040	251	5,565
1909.....			134	10,176	730	37,024	864	47,800
1910.....			155	16,000	1,237	58,087	1,392	74,087
1911.....			374	33,084	895	36,492	1,269	69,576
1912.....			604	50,680	1,456	66,442	2,060	117,122
1913.....			103	9,620	2,059	80,662	2,162	90,282
1914.....			261	18,886	1,386	88,317	1,647	107,203
1915.....			75	5,431	2,580	118,792	2,655	124,223
1916.....			479	75,776	3,476	249,586	3,955	325,362
1917.....			541	106,305	3,173	296,587	3,714	402,892
1918.....			180	40,018	2,934	208,852	3,114	248,870
1919.....			20	400	1,340	90,921	1,360	190,221
1920.....			233	31,913	1,957	133,704	2,190	165,617
1921.....			38	2,423	899	63,439	1,937	65,862
1922.....			24	1,500	573	29,853	597	31,353
1923.....			45	2,316	1,063	65,557	1,113	67,873
1924.....			46	3,275	1,288	72,842	1,334	76,117
1925.....			359	30,900	2,210	127,863	2,569	158,763
1926.....			326	29,516	2,401	165,344	2,727	194,860
Total.....	2,824	24,705	5,730	553,545	40,464	2,184,463	49,018	2,762,713

Table 297.—Production in Canada, Imports and Exports of Graphite, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Ore milled.....	3,590		6,534		9,006	
Production—						
No. 1 Flake.....	1,334	76,117	2,569	158,763	2,727	194,860
No. 2 Flake.....						
No. 3 Flake and Dust.....						
Total.....	1,334	76,117	2,569	158,763	2,727	194,860
Imports—						
Crucibles, plumbago.....		42,740		49,730		60,782
Plumbago, not ground or otherwise manufactured.....		2,651		772		3,836
Plumbago, ground and manufactures of, n.o.p.....		50,924		91,767		57,302
Exports—						
Graphite or plumbago, crude or refined.....	1,148	59,992	2,484	135,897	2,564	180,851

**Artificial Graphite.**—Artificial graphite is manufactured in electric furnaces at Niagara Falls, Ontario, by the Acheson Graphite Company. The annual production over a period of fifteen years is shown in the following table:

Table 298.—Artificial Graphite made in Canada, 1912-1926

Year	Pounds	Year	Pounds	Year	Pounds
1912.....	2,302,625	1917.....	1,096,172	1922.....	724,524
1913.....	2,184,472	1918.....	1,808,698	1923.....	1,554,376
1914.....	1,234,239	1919.....	358,524	1924.....	816,455
1915.....	497,271	1920.....	207,180	1925.....	688,230
1916.....	525,048	1921.....	376,508	1926.....	597,318

Table 299.—Principal Statistics of the Graphite Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	3	512,910	38	28,042	*3,387	12,932	31,353
1923.....	3	552,947	62	27,826	7,614	6,000	67,873
1924.....	4	647,947	75	55,449	12,163	30,000	76,117
1925.....	6	902,310	106	75,021	14,718	(a)	158,763
1926.....	3	1,132,273	68	63,064	10,804	(a)	194,860

\* Fuel only.

(a) Data not available.

Table 300.—Capital Employed in the Graphite Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY:		
Cost of lands, buildings, machinery and tools.....	818,370	1,052,388
Cost of supplies and stocks on hand.....	44,295	35,962
Cash, trading and operating accounts and bills receivable.....	39,645	43,923
<b>Total.....</b>	<b>902,310</b>	<b>1,132,273</b>

Table 301.—Employees, Salaries and Wages in the Graphite Industry in Canada, 1925 and 1926

	1925				1926			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
Salaried employees.....	7	2	9	\$ 14,070	8	2	10	\$ 15,255
Wage-earners.....	97	.....	97	60,951	58	.....	58	47,809
Total.....	104	2	106	75,021	66	2	68	63,064

Table 302.—Wage-Earners in the Graphite Industry in Canada, by Months, 1925 and 1926

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	36	45	July.....	133	71
February.....	49	43	August.....	137	60
March.....	61	51	September.....	60	55
April.....	64	50	October.....	67	69
May.....	78	51	November.....	68	60
June.....	116	61	December.....	59	51

Table 303.—Fuel and Electricity Used in the Graphite Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Selling value	Quantity	Selling value
Bituminous coal..... tons	250	\$ 2,500		\$
Fuel oil..... Imp. gal.	18,256	2,041	26,109	3,867
Gasoline..... Imp. gal.	1,355	406	4,404	1,403
Wood..... cords	2,046	7,271	1,566	5,534
Electrical power..... k.w.h.	300,000	2,500		
<b>Total.....</b>		<b>14,718</b>		<b>10,804</b>

Table 304.—Power Employed in the Graphite Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	4	260	4	260
Internal combustion engines.....	1	20	2	145
Hydraulic turbines or water wheels.....	3	300	3	300
<i>Total primary power.....</i>	<i>8</i>	<i>580</i>	<i>9</i>	<i>705</i>
Electric motors run by primary power in same plant.....	10	399	10	399
<i>Total electric power.....</i>	<i>10</i>	<i>399</i>	<i>10</i>	<i>399</i>
Boilers.....	3	260	3	260

Table 305.—\*World Production of Graphite, 1913 and 1922-1926

(Long tons)

	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE—</b>						
Canada.....	1,930	533	994	1,191	2,294	2,435
Australia.....				3		
Ceylon.....	28,540	10,850	10,669	9,651	15,426	11,623
Union of South Africa.....	35	37	53	49	47	46
Total.....	30,505	11,420	11,716	10,894	17,767	14,104
<b>FOREIGN COUNTRIES—</b>						
Austria.....	48,742	8,451	9,252	9,370	12,868	14,518
Czecho-Slovakia.....		10,571	9,714	11,743	18,169	12,893
France.....	1,175		187	506	1,121	(a)
Germany.....	11,900	31,822	20,521	9,917	16,582	14,075
Italy.....	10,966	4,473	5,600	7,616	9,777	9,451
Norway.....	295	1				
Spain.....		521			1,914	(a)
Sweden.....	87					
Greenland.....		425	59	52		
Indo-China (French).....				2,228	218	(a)
Japan.....	654	1,029	788	755	994	(a)
Korea.....	12,080	18,872	14,417	14,708	13,852	15,504
Madagascar.....	6,212	6,568	10,595	12,837	12,796	15,647
Mexico.....	4,364	2,021	5,401	7,894	5,745	4,363
United States.....	4,263	2,790	5,391	4,438	4,165	4,884
Total.....	100,738	87,544	81,925	82,064	98,201	91,335
<b>Grand total.....</b>	<b>131,243</b>	<b>98,964</b>	<b>93,641</b>	<b>92,958</b>	<b>115,968</b>	<b>105,439</b>

\*Source—Imperial Institute publications.

## GYPSUM

**Canada.**—Large deposits of gypsum occur throughout Canada. Quarries are operated in Hants, Inverness, and Victoria counties, Nova Scotia; near Hillsborough, Albert county, and Plaster Rock, Victoria county, New Brunswick; near Paris, Ontario; Gypsumville, Manitoba; and Canford, Falkland and Mayo, British Columbia.

The development of gypsum deposits in Nova Scotia took place during the period, 1779-1833, but the work was done mainly on a small scale by individual operators. In 1822, a gypsum deposit was opened up on the Grand river near Paris, Ontario, but at that early date the only use found for this product was for fertilizer. A mill was erected here in 1823 and operations

have continued since that date. The exploitation of New Brunswick deposits dates back to 1847. In 1901, deposits in Manitoba were first opened up and appreciable quantities of gypsum have been extracted annually since then. Shipments from British Columbia deposits did not commence until 1911, and prior to 1926 the production was only nominal; in that year, however, operations became very extensive.

Production data are not available prior to 1886, but according to export records, 67,830 tons of gypsum were shipped from Canada in 1874. During 1886 the Canadian deposits produced 162,000 tons; from 1889 to 1900, shipments ranged from 192,000 tons to 250,000 tons. Ten years later, sales amounted to 525,246 tons and in 1924, the total was 646,016 tons.

Continuing the advance in gypsum production recorded in 1925, the shipments during 1926 created a new high mark for the industry in Canada. Increases in tonnages shipped were reported in all producing provinces except New Brunswick. The total production for the year amounted to 883,728 tons worth \$2,770,813 as compared with 740,323 tons at \$2,389,891 produced in 1925. The average values received by the operators were as follows: lump, \$1.49; crushed, \$1.74; fine ground, \$6.27; and calcined, \$10.07 per ton.

Importations of gypsum, all grades, into Canada were recorded at 6,298 tons worth \$119,141 as against 8,921 tons with a valuation of \$136,308 imported in 1925.

Canadian crude gypsum exported, principally to the United States,<sup>6</sup> amounted to 668,064 tons in 1926. Ground gypsum and prepared wall plaster exported during the year totalled 10,062 tons. United States, Newfoundland, Australia and New Zealand were the principal importers of these materials.

Capital employed in this important Canadian mining industry in 1926 was reported at \$6,696,077. Employment was furnished to 68 salaried employees, 891 mine workers and 409 mill workers; their combined earnings were \$1,255,427. The cost of fuel used during the year was \$182,726, while the electric power consumed meant a further outlay of \$58,688. Plant equipment included 146 electric motors with a combined rating of 4,432 h.p.

**Nova Scotia.**—Gypsum deposits have been known in Nova Scotia since the early settlement of the province. Although it is known that from 1779 to 1833, individual operators, mainly farmers, carried on quarrying operations, hauled out the crude rock and either sold it to local traders or chartered a small vessel to convey it to the United States, no data are available regarding the extent of these activities. Several attempts were made by local producers to work up the crude rock but these were not successful owing to the limited home consumption and the consequent almost total dependence on the United States markets. When the United States duty was made prohibitive, all local milling operations ceased. From 1861 to 1867 gypsum was shipped through twenty-five Nova Scotia ports; in 1908 only six ports were engaged in this trade. In Nova Scotia the deposits now being worked, in Hants and Victoria counties, yielded 76 per cent of the total Canadian production in 1926. The major portion of the gypsum quarried, is shipped as crude material to the United States where it is in demand, as products from Nova Scotia gypsum are considered superior to those produced from the general run of United States rock. Advantageous locations, with nearby rail and seaboard facilities, assisted materially in the continued expansion of this industry in Nova Scotia.

**New Brunswick.**—The centre of activities in the gypsum industry in New Brunswick is near Hillsborough, Albert county. Operations have been carried on in this district since 1847. In 1854 there was a change in the ownership of the quarries, and shortly after this date a plaster mill was erected to supply both local and United States consumers. In 1926 extensive operations were continued in this district by one company, while a small production was reported by an individual operator. Very pure quality gypsum is produced from the Hillsborough deposits; products made from this material consist of hard wall plaster, finishing plaster and dental plaster of different grades. In addition to shipments to Canadian markets, considerable quantities are exported to the United States, Australia, and New Zealand.

**Ontario.**—The first record of gypsum in Ontario shows that in 1822 minor operations, consisting of the extraction of a few tons of this commodity for use as fertilizer, were conducted on a bed of gypsum near Paris, Ontario. The first mill for manufacturing gypsum was erected in 1823. Since that date operations in this district have been carried on almost continuously. At the present time the Ontario Gypsum Company, operating at Lythmore and Caledonia, is the only producer.

**Manitoba.**—Developments in the gypsum industry in Manitoba are of comparatively recent date, the year 1901 marking the first active intensive work on deposits in the province. The *Manitoba Union Mining Company* in that year erected a crushing and calcining mill at the head of Portage Bay on lake Manitoba. In 1925 the production of gypsum from the deposit at Gypsumville, Manitoba, increased approximately 20 per cent over the preceding year. The 1926 output was slightly higher than the total for 1925.

**British Columbia.**—The development of the gypsum industry in British Columbia only dates back to 1911, when a shipment of 780 tons was made to Vancouver and Victoria for use in the manufacture of cement. Small quantities were produced in this province during 1913 and 1917. From 1921 to 1925 minor tonnages were sold as land plaster for agricultural purposes. Operations on British Columbia deposits in 1926 became very extensive and comparatively large shipments were made to cement plants in Vancouver, B.C., and Exshaw, Alberta. The *British Columbia Gypsum Company* commenced shipments in 1926 from their quarry at Falkland to their mill at Port Mann which is equipped to calcine and prepare all grades of gypsum plasters as well as to manufacture plaster board. Exports of products from this mill were made to New Zealand during the current year.

Table 306.—Annual Production of Gypsum

Year	Nova Scotia		New Brunswick	
	Tons	Value	Tons	Value
		\$		\$
1874*	67,830	68,164		
1875	86,065	86,193	5,420	5,420
1876	87,720	87,590	4,925	6,616
1877	106,950	93,867	5,030	5,030
1878	88,631	76,695	16,335	16,435
1879	95,623	71,353	8,791	8,791
1880	125,685	111,833	10,375	10,987
1881	110,303	100,284	10,310	15,025
1882	135,426	121,070	15,597	24,581
1883	145,448	132,834	20,242	35,557
1884	107,653	100,446	21,800	32,751
1885*	81,837	77,998	15,140	27,730
1886	123,753	118,110	32,421	48,632
1887	116,346	116,346	29,102	29,216
1888	124,818	120,429	44,369	48,764
1889	165,025	142,850	40,866	49,130
1890	181,285	154,972	39,024	30,986
1891	161,934	153,955	36,011	33,996
1892	197,019	170,021	39,709	65,707
1893	152,754	144,111	36,916	41,846
1894	168,300	147,644	52,962	48,200
1895	156,809	133,929	66,949	63,839
1896	136,590	111,251	67,137	59,024
1897	155,572	121,754	82,658	118,116
1898	132,086	106,610	86,083	121,704
1899	126,754	102,055	116,792	151,296
1900	138,712	108,828	112,294	145,850
1901	170,100	136,947	121,595	189,709
1902	206,067	181,425	124,041	170,153
1903	189,427	173,881	119,182	172,080
1904	128,580	153,600	120,991	187,524
1905	272,252	298,248	163,553	232,586
1906	333,312	345,414	131,246	250,960
1907	357,411	380,859	118,106	213,638
1908	234,455	230,433	81,620	191,312
1909	345,682	364,379	98,716	226,975
1910	400,455	458,638	90,236	213,579
1911	353,999	406,457	93,205	115,044
1912	376,082	481,493	82,757	185,821
1913	404,801	479,515	103,954	279,395
1914	303,155	368,931	79,083	200,680
1915	298,864	339,857	74,501	184,929
1916	238,212	278,160	39,546	153,064
1917	215,472	301,261	38,556	191,631
1918	49,365	115,976	27,225	214,114
1919	163,852	250,174	42,409	315,656
1920	260,661	573,752	49,405	428,183
1921	206,831	511,883	54,030	360,220
1922	332,404	580,148	82,462	517,668
1923	341,705	747,934	104,740	564,680
1924	441,752	915,845	86,738	476,804
1925	551,230	1,070,408	71,745	408,917
1926	678,107	1,187,918	59,546	468,411

\*1874 to 1885, inclusive exports.

in Canada, by Provinces, 1874-1926

Ontario		Manitoba		British Columbia		Canada	
Tons	Value	Tons	Value	Tons	Value	Tons	Value
	\$		\$		\$		\$
						67,830	68,164
						91,485	91,615
120	180					92,765	94,385
						111,980	98,897
489	675					105,455	93,805
579	720					104,993	80,864
875	1,240					136,935	124,060
657	1,040					121,270	116,349
1,249	1,946					150,272	147,597
462	837					166,152	169,228
688	1,254					130,141	134,451
525	787					97,552	106,415
5,826	12,000					162,000	178,742
8,560	11,715					154,008	157,277
6,700	10,200					175,887	179,393
7,382	13,128					213,273	205,108
6,200	8,075					226,509	194,033
5,660	18,300					203,605	206,251
4,320	5,399					241,048	241,127
2,898	10,193					192,568	196,150
2,369	6,187					223,631	202,031
2,420	4,840					226,178	202,608
3,305	7,786					207,032	178,061
1,461	4,661					239,691	244,531
1,087	4,201					219,256	232,515
1,020	3,978					244,566	257,329
1,095	4,331					252,101	259,009
1,504	5,692	600	7,800			293,799	340,148
1,917	7,699	1,554	20,202			333,599	379,479
2,720	21,988	3,160	20,510			314,489	388,459
2,390	18,350	4,000	14,000			345,961	373,474
1,853	23,834	4,500	31,500			442,158	586,168
1,964	24,420	2,500	22,500			469,022	643,294
10,404	52,417					485,921	646,914
10,389	42,456	14,500	111,500			340,964	575,701
11,731	48,278	17,000	170,000			473,129	809,632
15,055	67,229	19,500	195,000			525,246	934,446
27,399	98,018	43,000	372,000	780	1,875	518,383	993,394
53,119	176,056	66,500	481,250			578,458	1,324,620
62,315	208,029	65,100	479,500	200	1,300	636,370	1,447,739
81,219	204,033	53,423	382,563			516,880	1,156,207
81,172	190,422	20,278	139,721			474,815	854,929
36,668	116,086	28,489	191,283			342,915	738,593
48,947	130,138	33,347	258,934	10	20	336,332	881,984
38,214	151,564	37,483	341,352			152,287	823,006
59,899	278,120	32,903	371,337			299,063	1,215,287
74,707	404,162	44,371	487,894			429,144	1,893,991
84,790	433,053	40,859	480,282	40	100	386,550	1,785,538
110,227	621,668	34,072	440,914	100	500	559,265	2,160,898
99,958	542,317	31,575	386,554	323	1,615	578,301	2,243,100
88,121	467,097	29,375	348,212	30	150	646,016	2,208,108
82,020	491,833	35,088	417,868	240	865	740,323	2,389,891
89,987	496,059	35,172	461,461	20,916	156,964	883,728	2,770,813

Table 307.—Annual Production of Gypsum in Canada, by Provinces, 1874-1926.

	Tons	\$
Nova Scotia.....	11,419,231	14,414,628
New Brunswick.....	3,276,446	8,358,962
Ontario.....	1,214,636	5,454,691
Manitoba.....	698,349	6,634,137
British Columbia.....	22,639	163,389
<b>Canada.....</b>	<b>16,661,301</b>	<b>35,025,807</b>

Table 308.—Summary of Statistics on Gypsum in Canada, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude gypsum mined.....	703,733		705,852		931,193	
Crude gypsum calcined.....	144,744		162,820		161,841	
<b>PRODUCTION BY GRADES—</b>						
Lump.....	139,618	253,191	131,612	198,806	151,906	225,749
Crushed.....	381,262	693,785	447,766	820,141	576,489	1,002,679
Fine ground.....	5,478	31,882	5,993	35,843	5,874	36,813
Calcined.....	119,658	1,229,250	154,952	1,335,101	149,459	1,505,572
<b>Total.....</b>	<b>646,016</b>	<b>2,208,108</b>	<b>740,323</b>	<b>2,389,891</b>	<b>883,728</b>	<b>2,770,813</b>
<b>PRODUCTION BY PROVINCES—</b>						
Nova Scotia.....	441,752	915,845	551,230	1,070,408	678,107	1,187,918
New Brunswick.....	86,738	476,804	71,745	408,917	59,546	468,411
Ontario.....	88,121	467,097	82,020	491,833	89,987	496,059
Manitoba.....	29,375	348,212	35,088	417,868	35,172	461,461
British Columbia.....	30	150	240	865	20,916	156,964
<b>Total.....</b>	<b>646,016</b>	<b>2,208,108</b>	<b>740,323</b>	<b>2,389,891</b>	<b>883,728</b>	<b>2,770,813</b>
<b>IMPORTS—</b>						
Crude.....	3,252	63,156	4,433	66,034	933	32,442
Ground.....	102	2,174	119	3,858	209	6,846
Plaster of Paris.....	3,969	62,770	4,369	66,386	5,156	79,853
<b>Total.....</b>	<b>7,323</b>	<b>128,100</b>	<b>8,921</b>	<b>136,308</b>	<b>6,298</b>	<b>119,141</b>
<b>EXPORTS—</b>						
Crude.....	472,236	747,829	533,646	861,468	668,064	1,069,123
Ground.....	5,226	83,927	5,643	87,242	10,062	137,785
<b>Total.....</b>	<b>477,462</b>	<b>831,756</b>	<b>539,289</b>	<b>948,710</b>	<b>678,126</b>	<b>1,206,908</b>

Table 309.—Principal Statistics of the Gypsum Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	13	4,092,090	1,055	909,072	*127,246	436,705	2,160,898
1923.....	15	4,249,628	1,225	1,017,556	190,906	552,990	2,243,100
1924.....	14	4,423,697	1,219	1,114,468	181,003	458,268	2,208,108
1925.....	15	4,506,995	1,039	1,018,585	189,649	(a)	2,389,891
1926.....	18	6,696,077	1,368	1,255,427	241,414	(a)	2,770,813

\*Fuel only.

(a) Data not available.

Table 310.—Capital Employed in the Gypsum Industry in Canada by Provinces, 1925 and 1926

	1925			1926		
	Nova Scotia	New Brunswick, Ontario, and Manitoba	Canada	Nova Scotia	New Brunswick, Ontario, Manitoba and British Columbia	Canada
	\$	\$	\$	\$	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>						
Cost of lands, buildings, machinery and tools.....	2,132,294	1,705,235	<b>3,837,529</b>	2,255,254	3,428,095	<b>5,683,349</b>
Cost of all materials and stocks on hand....	134,096	216,672	<b>350,768</b>	219,539	216,125	<b>435,664</b>
Cash, trading and operating accounts and bills receivable.....	62,999	255,699	<b>318,698</b>	48,448	528,616	<b>577,064</b>
<b>Total.....</b>	<b>2,329,389</b>	<b>2,177,606</b>	<b>4,506,995</b>	<b>2,523,241</b>	<b>4,172,836</b>	<b>6,696,077</b>

Table 311.—Employees, Salaries and Wages in the Gypsum Industry in Canada, 1925 and 1926

	1925				1926			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
Salaried employees.....	41	10	51	\$ 127,417	58	10	68	\$ 159,835
Wage-earners—								
Mine.....	726		726	891,168	891		891	1,095,592
Mill.....	262		262		409		409	
Total.....	988		988	891,168	1,300		1,300	1,095,592
Grand total.....	1,029	10	1,039	1,018,585	1,358	10	1,368	1,255,427

Table 312.—Wage-Earners in the Gypsum Industry in Canada by Provinces, 1926

Month	Nova Scotia		New Brunswick		Ontario		Manitoba		British Columbia		Canada	
	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill	Mine	Mill
January.....	150	32	100	79	43	136	20	56	16	48	329	351
February.....	140	30	96	80	43	135	20	63	18	31	317	339
March.....	114	30	90	82	42	136	16	67	24	32	286	347
April.....	619	48	61	79	42	145	17	91	34	47	773	410
May.....	763	65	93	81	42	148	16	102	33	51	947	447
June.....	777	65	130	83	42	154	15	81	29	47	993	430
July.....	861	68	93	94	49	151	16	73	43	39	1,062	425
August.....	883	68	83	95	69	142	16	73	38	38	1,089	416
September.....	808	61	118	80	68	138	16	68	39	35	1,049	382
October.....	828	59	96	95	65	146	16	82	27	34	1,032	416
November.....	852	59	105	88	54	146	16	79	30	37	1,057	409
December.....	712	61	94	67	50	142	16	85	25	40	897	395

Table 313.—Fuel and Electricity Used in the Gypsum Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	16,179	108,466	20,620	139,432
Lignite coal..... tons	262	1,312		
Coke..... tons	673	6,166	483	4,932
Gasoline..... Imp. gal.	37,645	10,742	115,603	28,660
Oil (fuel)..... Imp. gal.	8,040	1,286	39,150	7,026
Wood..... cords.	672	1,944		
Gas..... M. cu. ft.	4,032	1,874	5,080	2,676
Electric power..... k.w.h.	10,356,154	57,859	4,476,045	58,688
Total.....		189,649		241,414

Table 314.—Power Employed in the Gypsum Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	25	1,638	13	1,700
Internal combustion engines.....	18	677	40	1,616
<i>Total primary power.....</i>	<i>43</i>	<i>2,315</i>	<i>53</i>	<i>3,316</i>
Electric motors run by purchased power.....	52	2,439	95	3,601
<b>Total power employed.....</b>	<b>95</b>	<b>4,754</b>	<b>148</b>	<b>6,917</b>
Electric motors run by primary power in same plant.....	26	453	51	831
<i>Total electric power.....</i>	<i>78</i>	<i>2,892</i>	<i>146</i>	<i>4,432</i>
Boilers.....	13	1,315	21	2,060

Table 315.—\*World Production of Gypsum 1913, and 1922-1926

(Long tons)

Country	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE</b>						
United Kingdom.....	285,338	257,540	317,909	371,703	414,529	465,191
Canada.....	568,188	499,344	516,340	576,800	661,003	789,043
Union of South Africa.....	108	(a)	5,731	9,073	7,123	11,029
Cyprus (Exports).....	3,714	11,873	11,029	14,296	24,123	19,138
India.....	24,961	40,701	39,297	38,123	36,244	(a)
Australia.....	8,826	53,941	68,236	85,861	90,150	80,565
<b>Total.....</b>	<b>891,135</b>	<b>863,399</b>	<b>958,542</b>	<b>1,095,856</b>	<b>1,233,172</b>	<b>1,364,966</b>
<b>FOREIGN COUNTRIES</b>						
Austria.....		28,300	35,561	32,262	24,067	21,739
France.....	1,698,633	1,738,859	2,319,414	2,289,443	(a)	(a)
Germany.....		46,557	29,579	42,635	57,352	44,956
Greece.....	2,194	2,458	2,434	21,850	9,898	(a)
Italy.....		458,904	547,364	590,298	662,707	645,012
Rumania.....		8,916	37,810	20,454	52,994	43,616
Spain (exports).....	6,938	4,218	2,444	4,568	2,958	3,165
Algeria.....		42,900	48,633	53,600	(a)	64,600
United States.....	2,320,989	3,374,954	4,244,150	4,502,347	5,066,964	5,031,644
Argentina (exports).....	171	1,289	2,106	2,179	1,833	(a)
Chile.....	6,038	6,982	8,147	5,600	8,310	(a)
China (exports).....	4,970	7,631	7,159	5,042	6,984	3,721
Japan.....	(a)	53,202	33,724	42,400	152,736	(a)
New Caledonia.....		12,000	(a)	(a)	(a)	(a)
<b>Total.....</b>	<b>4,039,933</b>	<b>5,787,170</b>	<b>7,318,525</b>	<b>7,612,678</b>	<b>6,046,803</b>	<b>5,858,453</b>
<b>Grand total.....</b>	<b>4,931,068</b>	<b>6,650,569</b>	<b>8,277,067</b>	<b>8,708,534</b>	<b>7,279,975</b>	<b>7,223,419</b>

\*Source—Prior to 1925 Imperial Institute publications: Data for 1925 and 1926 obtained directly from the statistical bureaus of the different countries.

(a) Data not available.

## IRON OXIDES

**Canada.**—Mineral pigments produced in Canada in 1886 and classified under the above heading amounted to 350 tons valued at \$2,350. The annual variation in production has been considerable since that date; the low point for the industry being reached in 1890 when 275 tons were extracted, while the maximum output, 19,128 tons, was reached in 1920.

In the production totals for 1917, 1919 and 1920, a small quantity of zinc oxide has been included. This material was produced at the oxide plant at Notre Dame des Anges, Quebec, for use as a pigment.

Iron oxides produced in Canada have two main uses: (a) for the purification of illuminating gas and (b) as a raw material in the paint industry. When the material is to be used in the purification of coal gas, the iron oxides are shipped as mined but when it is to be used in the manufacture of paints, it is customary to dry and calcine the oxides before they are shipped.

Shipments of iron oxides during 1926 totalled 6,626 tons valued at \$101,843 and the capital employed in this industry in Canada was reported at \$178,078. Salaries and wages paid to the 45 employees totalled \$38,348. Expenditures for fuel and electricity used during the year reached the total of \$17,576.

**Quebec.**—In 1851, an important deposit of ochre was worked at Pointe du Lac, St. Maurice county, and shipments of dried ochre were made to the United States but subsequently this property was abandoned. Thirty-two years later the manufacture of dry ochre was commenced on a small scale in Iberville township on the Little Romaine river. This deposit was later abandoned but in 1916 it was re-opened and a small quantity of crude ochre was taken out for use as a pigment in the paper industry. A deposit was opened up at St. Malo, Champlain county, in 1885 and a calcining plant erected. Calcined ochre was shipped from this mill to Montreal where it was further prepared for use in the manufacture of paint.

Interesting information concerning the deposits in the Three Rivers district is contained in the report by H. Frechette published in the *Summary Report of the Mines Branch* for 1919 and 1920. An extract from this report follows:—

The more important occurrences of ochre lie to the North of the St. Lawrence river. Ore group of such deposits is situated a short distance to the east of Three Rivers, between Cap de la Magdeleine and Champlain, about two miles north from the St. Lawrence. In this area, at Red Mill, the Canada Paint Company, Ltd., operates an extensive plant for calcining, washing, and grinding pigments from its deposits. A variety of shades of red, umber, and sienna are produced.

The plant and deposits of the Champlain Oxide Company are about 1½ mile east of Red Mill. This company operates a calcining plant, which is situated near the deposits, and a grinding and packing plant beside the Canadian Pacific Railway tracks.

For a number of years Thomas H. Argall, of Three Rivers, produced calcined red oxide from his deposits two miles east of those of the Champlain Oxide Company. Owing to labour troubles, he closed his plant and transferred his business to Pointe-au-Lac where he now ships uncalcined ochre for use in the purifying of illuminating gas. He obtains this material from a series of deposits lying about one mile to the north of his warehouse, which is beside the Canadian Pacific Railway tracks, nine miles west of Three Rivers.

About thirty years ago the Radnor Paint Company operated a calcining and grinding plant at Proulx, Champlain county. The crude ochre was obtained from rather irregular deposits along the beds of the small brooks which join and flow into the St. Maurice river a short distance south of Grandes Piles. This property is now owned by the Laurentide Company, of Grand Mere, and is within the area set aside by them for reforestation.

To the south of the St. Lawrence river, in the sixth range of Gentilly, there is a rather extensive deposit of ochre between the base of a high sand hill and the Gentilly river. In places the ochre is rather sandy. Several years ago this deposit was worked to a limited extent by Ouellet and Thibaudeau. Two small calcining furnaces are all that now remain of the equipment. The deposits are situated six or seven miles from the railway and hauling had to be done over poor roads.

**Ontario.**—Prior to 1911 small quantities of ochre were produced intermittently from a deposit at Campbellville, Halton county. No production has been recorded in this province since that date.

**British Columbia.**—In 1921 a trial shipment of bog iron ore was made from Alta lake. The following year an experimental consignment was sent to Calgary by a small operator in the Windermere district. Shipments totalling 500 tons were made from these two deposits during 1923. There has been a small annual production during the past three years.

Table 316.—Production of Iron Oxides in Canada, 1886-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	350	2,350	1900.....	1,966	15,398	1914.....	5,890	51,725
1887.....	485	3,733	1901.....	2,233	16,735	1915.....	6,248	48,353
1888.....	397	7,900	1902.....	4,955	30,495	1916.....	8,811	58,711
1889.....	794	15,280	1903.....	6,266	32,760	1917.....	9,409	87,605
1890.....	275	5,125	1904.....	3,925	24,995	1918.....	17,317	112,440
1891.....	900	17,750	1905.....	5,105	34,675	1919.....	11,862	113,427
1892.....	390	5,800	1906.....	6,758	36,125	1920.....	19,128	157,909
1893.....	1,070	17,700	1907.....	5,828	35,570	1921.....	9,048	93,610
1894.....	611	8,690	1908.....	4,746	30,440	1922.....	7,285	110,608
1895.....	1,339	14,600	1909.....	3,940	28,093	1923.....	10,424	129,636
1896.....	2,362	16,045	1910.....	4,813	35,185	1924.....	7,266	91,160
1897.....	3,905	23,560	1911.....	3,622	28,333	1925.....	7,118	91,913
1898.....	2,226	17,450	1912.....	7,654	32,410	1926.....	6,626	101,843
1899.....	3,919	20,000	1913.....	5,987	41,774			
<b>Total.....</b>							<b>213,253</b>	<b>1,847,911</b>

Table 317.—Production in Canada, Imports and Exports of Iron Oxides, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	7,266	91,160	7,118	91,913	6,626	101,843
IMPORTS—						
Ochres, ochrey earths, siennas, and umbers.....	2,103	72,414	2,401	82,096	2,949	97,405
Oxides, fire proofs, rough stuffs, fillers and colours, dry, n.o.p.....	2,435	387,544	2,532	460,063	3,054	560,116
EXPORTS—						
Mineral pigments, iron oxides and ochres..	882	44,681	850	40,435	808	34,259

Table 318.—Principal Statistics of the Iron Oxides Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	4	217,428	49	44,839	*16,318	54,041	110,608
1923.....	6	209,340	60	49,056	17,677	55,318	129,636
1924.....	5	193,633	38	33,221	16,815	34,428	91,160
1925.....	5	173,940	47	35,454	16,073	(a)	91,913
1926.....	5	178,078	45	38,348	17,576	(a)	101,843

\*Fuel only.

(a) Data not available.

Table 319.—Capital Employed in the Iron Oxides Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	133,659	133,719
Cost of supplies and stocks on hand.....	37,579	33,495
Cash, trading and operating accounts and bills receivable.....	2,702	10,864
<b>Total.....</b>	<b>173,940</b>	<b>178,078</b>

Table 320.—Employees, Salaries and Wages in the Iron Oxides Industry in Canada, 1925 and 1926

Class	1925		1926	
	Number of employees	Salaries and wages	Number of employees	Salaries and wages
		\$		\$
Salaried employees.....	2	3,869	2	3,100
Wage-earners.....	45	31,585	43	35,248
<b>Grand total.....</b>	<b>47</b>	<b>35,454</b>	<b>45</b>	<b>38,348</b>

Table 321.—Wage-Earners in the Iron Oxides Industry in Canada, by Months, 1925 and 1926

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	22	21	July.....	59	54
February.....	22	20	August.....	45	54
March.....	24	24	September.....	47	54
April.....	28	26	October.....	44	49
May.....	46	26	November.....	33	40
June.....	55	41	December.....	22	22

Table 322.—Fuel and Electricity Used in the Iron Oxides Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	40	720	.....	.....
Bituminous coal..... tons	603	4,819	903	7,130
Fuel oil..... Imp. gal.	1,985	427	1,680	227
Gasoline..... Imp. gal.	1,600	420	1,300	468
Wood..... cords	1,150	6,750	1,220	6,315
Electric power..... k.w.h.	147,696	2,937	171,598	3,436
<b>Total.....</b>		<b>16,073</b>		<b>17,576</b>

Table 323.—Power Employed in the Iron Oxides Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Internal combustion engines.....	2	60	4	80
<i>Total primary power.....</i>	<i>2</i>	<i>60</i>	<i>4</i>	<i>80</i>
Electric motors run by purchased power.....	4	117	4	117
<b>Total power employed.....</b>	<b>6</b>	<b>177</b>	<b>8</b>	<b>197</b>

## MICA

**Canada.**—The first official record of the production of mica in Canada was for the year 1886, when 20,361 pounds of cut mica valued at \$29,008 were shipped by three producers in Ontario and one in Quebec. During the following year 22,083 pounds of cut mica and 18 tons of ground mica were produced. In 1890, mica shipped, for electrical purposes totalled 400,559 pounds averaging 14.6 cents per pound; for the stove trade, 3,400 pounds at \$2.50 per pound; and waste mica, 367,000 pounds worth \$5.00 per ton.

In point of production value, 1920 was the peak year for the mica industry in Canada with total sales valued at \$376,022. Records of the tonnage produced only cover the period 1909 to 1926 and during that time the annual shipments varied from 369 tons to a maximum for the industry of 4,091 in 1924. During that year the 50 mica producers had a capital investment of \$249,876 and a payroll of 223 employees receiving \$127,201. In 1926 the capital employed by the 22 operating firms was reported at \$186,478. Salaried employees and wage-earners engaged in this industry totalled 208 and their combined earnings amounted to \$128,269. Fuel and electricity used during the year necessitated an expenditure of \$5,353. Production during the year totalled 2,545 tons valued at \$229,204, while Customs' records showed exports of rough cobbled and thumb-trimmed mica amounting to 44 tons appraised at \$20,516; splittings, 315 tons at \$432,345; and scrap and waste, 3,799 tons at \$45,297.

Important deposits of mica in Canada are located in the counties of Hull and Labelle in Quebec, and Lanark, Leeds and Frontenac in Ontario. The product of these mines, in the main part, is shipped first to mica-trimming shops, conveniently located, where it is either rough-cobbled or split and trimmed prior to exportation to the United States or Great Britain.

Large quantities of scrap mica were shipped to the United States to be ground for use in the manufacture of prepared roofings. According to a survey made in 1923, the consumption of mica by Canadian industries in that year, was as follows: roofing materials, 359 tons; wallpaper, 200 tons; electrical goods, 31 tons; and rubber, 22 tons.

Statistics relating to the extensive mica-trimming shops in Ontario and Quebec have not been included in this report, but have been treated under a separate heading in the report on *Manufactures of Non-Metallic Minerals*.

India, United States, Canada, South Africa and Madagascar are the principal mica-producing countries. Only muscovite is produced in each of the first two countries; the Canadian output consists of phlogopite, while the Madagascar production is made up of one-fifth muscovite and the balance phlogopite. It will be seen that the last named country is Canada's chief competitor. Phlogopite or amber mica is used in the construction of electrical equipment in preference to muscovite.

Scrap material, which includes mica that is too small and irregular for splitting, and the refuse from the trimming shops, is ground and bolted into various sizes, grading from 20-mesh to 200-mesh. Grades ranging from 20 to 80 mesh are used in the manufacture of prepared roofings; the 40-mesh grade, if free from grit, is used as a lubricant in some axle greases; and the 200-mesh grade is used as a filler in rubber manufacture.

It will be noted that the stated value of the exports of Canadian mica exceeded by a considerable amount the value placed on shipments reported by operators. An explanation of this, lies in the fact, that the exported material consisted principally of mica splittings shipped from large trimming shops situated in Ontario and Quebec.

Under the United States New Tariff Act the duties on the different grades of mica are as follows: mica, unmanufactured, valued at not above 15 cents per pound—4 cents per pound; mica, unmanufactured, valued at above 15 cents per pound—25 per centum ad valorem; mica,

cut or trimmed and mica splittings—30 per centum ad valorem; mica plates, and built-up mica, and all manufactures of mica, of which mica is the component material of chief value—40 per centum ad valorem; ground mica—20 per centum ad valorem.

**Quebec.**—The Villeneuve mine in Ottawa county was first worked in 1884 and was operated continuously until 1888 during which period approximately 35,000 pounds of muscovite mica were shipped. Intermittent operations were carried on at this property from 1890 to 1898.

In 1898 about eight important amber mica mines were in operation in Quebec, and in addition small shipments were made from some 20 prospects. The following year the amber mica industry was in a flourishing condition, 35 operators reported production while 20 prospects were in the process of development. Shipments of thumb-trimmed mica during that year, according to provincial records, were 331 tons valued at \$108,063; additional shipments were made of mica (not prepared) totalling 240 tons worth \$28,800. In 1907, considerable activity was recorded in the industry and 288 wage-earners earning \$108,600 were employed. During the ensuing year a decline in employment was noted as only 184 workers receiving \$47,724 were engaged. The 1909 records show shipments totalling 128 tons; employment furnished 176 men; and wages amounting to \$35,884. Fourteen operators in 1921 employed 75 workers who received \$48,134 and produced 484 tons. Data for 1926 show 11 producers shipping 1,664 tons and a pay roll of 162 workers receiving \$97,285.

**Ontario.**—A muscovite deposit in North Burgess township opened up in 1869 was one of the first mica mines operated in Canada. About 2 tons of mica were produced and shipped from this deposit for use in the stove industry in the United States.

Ontario deposits of mica are located principally in an area of 900 square miles between Kingston and Ottawa. Prior to 1890, the mining of mica was generally carried on in conjunction with the production of phosphate. During that year the demand for mica increased, with a consequent advance in production. Ontario deposits shipped 240 tons in 1890. Shipments increased to a total of 355 tons in 1906 in the production of which there were 147 employees earning \$48,221. The following year, 456 tons were sold and employment was furnished 158 wage-earners who received \$63,450. Ontario's six operators in 1921, had 29 employees on their payrolls whose earnings totalled \$26,298. During 1926, operators numbered 11; employees 46; salaries and wages, \$30,984; and production 881 tons valued at \$59,086.

In Ontario trimming shops and splitting works are located at Ottawa, Kingston and Perth. Scrap mica is sold in large quantities and it is concentrated, ground to various sizes and shipped for use in surfacing tar or asphalt roofing shingles and ready roofing, in the manufacture of lubricants and in the rubber industry. Ontario's first mica-grinding plant was built at Bancroft in 1926, but it did not commence to operate until 1927.

Table 324.—Production of Mica in Canada, by Provinces, 1886-1926

Year	Quebec		Ontario		Canada	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1886.....		6,991		22,017		29,008
1887.....		8,276		21,540		29,816
1888.....	No	record	15	30,207	15	30,207
1889.....		1,496		27,222		28,718
1890.....		9,590		58,484		68,074
1891.....		27,000		44,510		71,510
1892.....		23,000		81,745		104,745
1893*.....						75,719
1894*.....						45,581
1895*.....						65,000
1896*.....						60,000
1897.....		26,000		50,000		76,000
1898.....		106,375		12,000		118,375
1899.....		133,000		29,475		163,000
1900.....		108,000		60,000		166,000
1901.....		120,000		40,000		160,000
1902.....	66	34,204	993	101,600	1,059	135,904
1903.....		74,119		103,738		177,857
1904.....		76,487		84,290		160,777
1905.....		109,672		68,563		178,235
1906.....	283	159,334	291	144,579	574	303,913
1907.....	318	224,197	456	88,402	774	312,599
1908.....	148	82,613	288	57,258	436	139,871
1909.....	128	93,298	241	54,484	369	147,782
1910.....	316	87,295	442	103,090	758	190,385
1911.....	217	69,465	373	59,212	590	128,677
1912.....	196	81,044	384	62,932	580	143,976
1913.....	626	125,488	478	68,816	1,104	194,304
1914.....	246	62,794	349	46,267	595	109,061
1915.....	217	50,390	200	41,515	417	91,905
1916.....	844	192,343	364	62,896	1,208	255,239
1917.....	774	286,730	392	72,121	1,166	358,851
1918.....	481	229,119	266	42,431	747	271,550
1919.....	2,429	218,437	325	55,351	2,754	273,788
1920.....	737	281,460	1,466	94,562	2,203	376,022
1921.....	484	41,172	218	28,891	702	70,063
1922.....	1,360	97,748	1,989	54,515	3,349	152,263
1923.....	1,545	216,684	1,980	110,290	3,525	326,974
1924.....	1,677	185,020	2,414	172,252	4,091	357,272
1925.....	2,415	178,800	1,605	82,663	4,020	261,463
1926.....	1,664	170,118	881	59,086	2,545	229,204
Total.....						6,639,688

\*Exports plus consumption—accurate separation of data by provinces not obtainable.

†Includes production from British Columbia valued at \$525.

Table 325.—Production of Mica in Canada by Grades, 1925 and 1926

	1925			1926		
	Pounds	Value f. o. b. shipping point	Price per pound	Pounds	Value f. o. b. shipping point	Price per pound
		\$	\$		\$	\$
Rough cobbed.....	413,500	23,471	0.056	109,880	11,724	0.10
Thumb-b-trimmed.....	357,943	73,443	0.238	322,639	64,958	0.20
Splittings only.....	188,265	129,454	0.69	180,603	120,503	0.67
Scrap.....	7,080,331	35,095	0.005	4,476,405	32,019	0.007
Total.....	8,040,039	261,463	0.036	5,089,527	229,204	0.04

Table 326.—Production in Canada, Imports and Exports of Mica, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Quebec.....	1,677	185,020	2,415	178,800	1,664	170,118
Ontario.....	2,414	172,252	1,605	82,663	881	59,086
<b>Total.....</b>	<b>4,091</b>	<b>357,272</b>	<b>4,020</b>	<b>261,463</b>	<b>2,545</b>	<b>229,204</b>
IMPORTS—						
Mica and manufactures of, n.o.p.....		*130,598		115,994		137,347
EXPORTS—						
Rough cobbed and thumb-trimmed.....	88	52,527	28	21,366	44	20,516
Splittings.....	285	424,503	230	324,967	315	432,345
Scrap and waste.....	4,519	63,610	4,991	63,931	3,799	45,297
Plate and manufactures (micanite).....		3,326		1,046		1,084
<b>Total.....</b>		<b>543,966</b>		<b>411,310</b>		<b>499,242</b>

\*Nine months only.

Table 327.—Principal Statistics of the Mica Mining Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	20	441,802	147	64,641	*1,807	45,825	152,263
1923.....	33	223,650	219	112,469	4,772	60,216	326,974
1924.....	50	249,876	223	127,201	5,532	(a)	357,272
1925.....	36	190,144	269	123,079	4,528	(a)	261,463
1926.....	22	186,478	208	128,269	5,353	(a)	229,204

\*Fuel only.

(a) Date not available.

Table 328.—Capital Employed in the Mica Mining Industry in Canada, by Provinces, 1925 and 1926

	1925			1926		
	Quebec	Ontario	Canada	Quebec	Ontario	Canada
	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—						
Cost of lands, buildings, machinery and tools.....	61,638	27,134	88,772	122,771	20,192	142,963
Cost of supplies and stocks on hand.....	15,184	54,493	69,677	18,362	2,360	20,722
Cash, trading and operating accounts and billsreceivable.....	21,708	9,987	31,695	19,293	3,500	22,793
<b>Total.....</b>	<b>98,530</b>	<b>91,614</b>	<b>190,144</b>	<b>160,426</b>	<b>26,052</b>	<b>186,478</b>

Table 329.—Wage-Earners in the Mica Mining Industry in Canada, by Months, 1925 and 1926

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	131	138	July.....	267	179
February.....	137	156	August.....	277	179
March.....	146	152	September.....	278	191
April.....	138	157	October.....	245	144
May.....	198	204	November.....	207	107
June.....	240	218	December.....	183	91

Table 330.—Fuel and Electricity Used in the Mica Mining Industry in Canada, 1925 and 1926

Kind		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Bituminous coal.....	tons	112	915	103	809
Gasoline.....	Imp. gal.	350	100	1,300	403
Wood.....	cords	572	3,513	498	3,101
Electric power.....	k.w.h.			34,500	1,040
<b>Total.....</b>			<b>4,528</b>		<b>5,353</b>

Table 331.—Power Employed in the Mica Mining Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	3	132		
Hydraulic turbines or water wheels.....	1	200	1	150
<i>Total primary power.....</i>	<i>4</i>	<i>332</i>	<i>1</i>	<i>150</i>
Electric motors run by purchased power.....	2	4	3	48
<b>Total power employed.....</b>	<b>6</b>	<b>336</b>	<b>4</b>	<b>198</b>
Electric motors run by primary power in same plant.....	5	120	4	125
<i>Total electric motors.....</i>	<i>7</i>	<i>124</i>	<i>7</i>	<i>173</i>
Boilers.....	4	230	4	300

Table 332.—\*World Production of Mica, 1913 and 1922-1926

(Long tons)

Country	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE—</b>						
Canada.....	986	2,990	3,147	3,653	3,589	2,272
India.....	2,288	2,992	3,948	4,112	4,985	4,497
Southern Rhodesia.....		59	81	134	130	163
Tanganyika Territory.....		11	32	55	68	52
Union of South Africa.....		1	13	892	1,054	1,130
Ceylon.....		1	1		1	(a)
Australia.....		4		2	4	7
<b>Total.....</b>	<b>3,274</b>	<b>6,058</b>	<b>7,222</b>	<b>8,848</b>	<b>9,831</b>	<b>8,121</b>
<b>FOREIGN COUNTRIES—</b>						
United States.....	5,511	6,411	8,112	4,856	9,457	7,257
Madagascar.....		91	162	274	282	325
Argentina (exports).....	6	63	100	118	117	83
Brazil.....	10	66	55	78	64	(a)
Japan.....		15	424	582	1,065	(a)
Germany.....					493	(a)
Guatemala.....		(b) 4			16	12
Chosen (Korea).....		19	11	23	20	16
Norway.....		1	10	25	23	(a)
Russia.....		8	(a)	(a)	(a)	(a)
Spain.....			3			
Sweden.....		8	5	4	93	(a)
<b>Total.....</b>	<b>5,527</b>	<b>6,686</b>	<b>8,882</b>	<b>5,960</b>	<b>11,630</b>	<b>7,693</b>
<b>Grand total.....</b>	<b>8,801</b>	<b>12,744</b>	<b>16,104</b>	<b>14,808</b>	<b>21,461</b>	<b>15,814</b>

\*Source—Imperial Institute publications.

(a) Data not available.

(b) Estimated.

## QUARTZ

**Canada.**—Quartz production in Canada prior to 1906 was not remunerative enough to cause much activity in this industry. The earliest records available show that in 1890 a shipment of 200 tons valued at \$1,000 was made from a Quebec deposit. Small shipments were recorded in 1893, 1896, 1898 and 1899. During 1906 production commenced for the purpose of supplying flux and furnace linings to the industries in the Sudbury district of Ontario. Shipments from the Ontario quarries have been continuous since that date.

The high mark for the industry of 268,155 tons was reached in 1918. The production during 1926 reached the total of 232,082 tons valued at \$553,161. An increase of 17.6 per cent in quantity and 52 per cent in value is indicated by these figures when compared with the totals for the preceding year of 197,224 tons worth \$363,612.

Imports of sillex or crystallized quartz into Canada during 1926 totalled 2,554 tons with a valuation of \$60,070. Flint importations increased considerably from the 1925 total and amounted to 4,731 tons appraised at \$49,635.

Capital employed by the 17 firms operating in the Canadian quartz industry was \$1,056,705. Employment was furnished 17 salaried employees and 226 wage-earners; their total earnings amounted to \$208,839. The cost of fuel and electricity used in this industry was \$44,311. Primary power employed consisted of 15 units with a combined rating of 721 h.p. Electric motors in operation during the year were reported at 14 units with a total rating of 533 h.p.

**Quebec.**—The first recorded production of quartz in Quebec was in 1890. Output figures for that year show shipments of 200 tons valued at \$1,000. In 1893, a small shipment of 100 tons was made from a deposit on the north shore of the St. Lawrence river near Quebec. From 1910 to 1916, production ranged between 548 tons and 1,149 tons, however, increases were shown during the ensuing years and the maximum total of 24,550 tons for the province was reached in 1926.

During 1923, four quarries were in operation in Quebec; their capital investment totalled \$173,858, while 47 men were employed earning \$48,260. The six quarries active in 1926 reported actual capital employed at \$187,210; and a payroll of 60 men receiving \$49,380.

A deposit of Potsdam sandstone, one mile east of St. Canute, supplies the major portion of the production of silica in Quebec. This sandstone is ground and screened, four grades in all being produced, the first three of which are consumed in the glass, silicon carbide and foundry industries.

A considerable tonnage of quartz is produced annually in connection with feldspar quarrying in the Buckingham district.

**Ontario.**—The first production of importance in the quartz industry in Ontario is recorded for 1906, when 48,376 tons were shipped. This material was extracted from quarries in the Sudbury district and was used mainly as a flux and for furnace linings. In 1909, a small quantity of quartz was shipped by feldspar producers. The following year shipments commenced to Welland for the manufacture of ferrosilicon; 92 men were employed in the quarries with wages amounting to \$49,382. Maximum production for the industry was attained in 1923 when 225,110 tons valued at \$483,285 were shipped and employment was furnished 218 men earning \$213,780. Capital actually invested in the 7 quarries operating that year was \$820,206. During 1926, the 8 plants in operation produced 192,733 tons worth \$339,304; had a capital investment of \$817,339; and employed 130 men who received \$114,938.

**British Columbia.**—Quartz production commenced in British Columbia during 1914 with a total of 30,559 tons produced at Anyox and Trail. This material is quarried for use as a flux at the Anyox and Trail smelters. The 1918 shipments totalled 49,886 tons; the high mark for the industry in the province. In 1926, the production was 6,466 tons valued at \$77,060.

Table 333.—Production of Quartz in Canada, 1890-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1890.....	200	1,000	1907.....	56,585	124,148	1917.....	216,288	496,182
1891-2.....			1908.....	44,741	52,830	1918.....	268,155	629,813
1893.....	100	500	1909.....	56,924	71,285	1919.....	94,991	527,635
1894-5.....			1910.....	88,205	91,951	1920.....	128,295	467,821
1896.....	10	50	1911.....	60,526	83,865	1921.....	100,350	312,947
1897.....			1912.....	109,242	195,216	1922.....	109,947	208,598
1898.....	284	570	1913.....	78,761	169,842	1923.....	264,076	599,250
1899.....	600	1,260	1914.....	54,148	84,583	1924.....	150,896	323,156
1900-1905.....			1915.....	127,108	205,153	1925.....	197,224	363,612
1906.....	48,376	65,765	1916.....	136,745	251,226	1926.....	232,082	553,161
Total.....							2,615,359	5,881,419

Table 334.—Production in Canada, and Imports of Quartz, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Nova Scotia.....			1,352	6,760	8,333	29,018
Quebec.....	17,893	87,267	6,459	30,064	24,550	107,779
Ontario.....	111,645	192,855	188,560	324,526	192,733	339,304
British Columbia.....	21,358	43,034	853	2,262	6,466	77,060
Total.....	150,896	323,156	197,224	363,612	232,082	553,161
IMPORTS—						
Silex.....	1,941	49,552	2,196	39,301	2,554	60,070
Flint.....	6,016	64,753	3,601	36,936	4,731	49,633

Table 335.—Principal Statistics of the Quartz Mining Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	9	707,180	151	74,412	*27,961	28,506	208,598
1923.....	11	1,044,456	278	284,189	55,985	161,881	599,250
1924.....	11	991,863	171	172,397	34,281	44,848	323,156
1925.....	14	1,005,159	153	145,494	20,495	(a)	363,612
1926.....	17	1,056,705	243	208,839	44,311	(a)	553,161

\* Fuel only.  
(a) Date not available.

Table 336.—Capital Employed in the Quartz Mining Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	905,340	946,839
Cost of supplies and stocks on hand.....	84,774	101,860
Cash, trading and operating accounts and bills receivable.....	15,045	8,006
Total.....	1,005,159	1,056,705

Table 337.—Employees, Salaries and Wages in the Quartz Mining Industry in Canada, 1925 and 1926

	1925				1926			
	Number			Salaries and wages	Number			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
Salaried employees.....	14	1	15	33,409	16	1	17	28,351
Wage-earners.....	138		138	112,085	226		226	180,488
<b>Total.....</b>	<b>152</b>	<b>1</b>	<b>153</b>	<b>145,494</b>	<b>242</b>	<b>1</b>	<b>243</b>	<b>208,839</b>

Table 338.—Wage-Earners in the Quartz Mining Industry in Canada, by Months, 1925 and 1926

Month	1925	1926	Month	1925	1926
January.....	61	73	July.....	111	193
February.....	54	70	August.....	133	216
March.....	22	77	September.....	132	219
April.....	57	66	October.....	132	248
May.....	91	109	November.....	77	256
June.....	122	169	December.....	50	145

Table 339.—Fuel and Electricity Used in the Quartz Mining Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	3,056	17,032	3,468	22,118
Coke..... tons			30	300
Fuel oil..... Imp. gal.	1,200	144	69,132	7,977
Gasoline..... Imp. gal.	1,602	417	1,320	408
Wood..... cords	30	150	30	175
Electric power..... k.w.h.	84,000	2,752	653,000	13,333
<b>Total.....</b>		<b>20,495</b>		<b>44,311</b>

Table 340.—Power Employed in the Quartz Mining Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	12	613	11	607
Internal combustion engines.....			4	114
<i>Total primary power.....</i>	<i>12</i>	<i>613</i>	<i>15</i>	<i>721</i>
Electric motors run by purchased power.....	8	413	7	213
<b>Total power employed.....</b>	<b>20</b>	<b>1,026</b>	<b>22</b>	<b>934</b>
Electric motors run by the primary power in same plant.....	6	120	7	320
<i>Total electric motors.....</i>	<i>14</i>	<i>533</i>	<i>14</i>	<i>533</i>
Boilers.....	5	750	5	775

## SALT

**Canada.**—The production of salt in the province of Ontario was first recorded in 1866 when a company was formed to drill for oil on the north bank of the Maitland river, and, while no success attended the efforts of the drillers in their search for oil, a bed of rock salt was found at a depth of 964 feet. In September, 1866, this company (incorporated under the name of the *Goderich Petroleum Company*, later changed to *Goderich Salt Company*) commenced pumping brine. In the initial working in connection with these deposits the refining was done by the kettle method, which was soon discarded and replaced by the pan method of evaporation. Wells were drilled and plants erected at Clinton and Seaforth, Ontario, and four refineries were in operation at Goderich in 1879; at the present time there are only two firms operating at Goderich.

Census reports show that there were 16 salt works in operation in Ontario and 2 in Nova Scotia during 1871. The Ontario plants employed 175 men with a total wage of \$60,990 while the products made were valued at \$119,999. In Nova Scotia during that year there were 10 employees who received \$2,040 and the total value of the plant production was \$16,600. According to the 1881 census, 26 plants were in operation in Ontario and 1 each in Nova Scotia and New Brunswick. Total employees that year numbered 247 earning \$78,517; products made were valued at \$395,848 and the capital invested in the operating plants was \$298,100. The development of the industry has reached the point where in 1926 the 12 plants in operation reported a capital investment of \$2,782,728; the number of employees was 384 who received salaries and wages amounting to \$482,651; products sold during the year had a valuation of \$1,480,149.

Salt production in Canada continues to increase; the high record of 233,746 tons produced in 1925 was topped by a new high mark of 262,547 tons in 1926. This year's value was recorded at \$1,480,149, as compared with a value of \$1,410,697 for the 1925 production. The average price for all grades declined somewhat, being \$5.63 per ton in the year under review, as against \$6.04 in the previous twelve months.

Ontario's production was 252,345 tons or 96.1 per cent of the Canadian total; Nova Scotia and Alberta contributed the remainder. Alberta shipments were from the Fort McMurray district and totalled 2,037 tons. The Nova Scotia production was obtained from the Malagash mine.

Imports of salt into Canada were recorded at 188,401 tons appraised at \$1,036,594. Exports of Canadian salt amounted to 1,164 tons valued at \$19,423.

Fuel costs reported by the 11 companies in operation in 1926 accounted for an outlay of \$307,093 while the electric power consumed added \$17,519 to the total operating expenditures. Bituminous coal was the largest item among the fuels consumed amounting to 54,177 tons at \$280,249. Steam engines employed numbered 30 with a rating of 752 h.p. The 56 electric motors in use during the year were rated at 711 h.p.

**Nova Scotia.**—At Malagash, Nova Scotia, in October, 1917, bore holes were drilled to depths ranging from 80 feet to 173 feet to prove up a deposit of rock salt. During the following two years shaft sinking and further development work were carried on. A small shipment was made from this deposit in 1919, and in 1920 sales totalled 3,023 tons. Production has increased in Nova Scotia and during 1926 shipments reached the high mark of 8,165 tons.

**New Brunswick.**—Small quantities of brine have been evaporated for local consumption at Plumweseep, near Sussex, King's county, New Brunswick. These operations ceased about 1898.

**Ontario.**—Salt production in Ontario dates back to 1866, and this industry has since developed into one of the province's most stable industries, ranking second only to natural gas in point of annual production value in the non-metallic group. The salt beds occur in limestone of the Salina formation, Silurian system. Ontario's production is obtained from wells in the southwestern part of the province; plants are located at Courtright, Exeter, Goderich, Kin-cardine, Sandwich, Sarnia and Windsor. Considerable quantities of the brine are evaporated

and the salt residue purified and marketed in several grades; the remainder is used in chemical plants at Sandwich and Amherstburg for the manufacture of bleaching powder, liquid chlorine, soda ash, and washing and caustic soda.

**Manitoba.**—Manitoba produced a small amount of salt in the Dauphin lake district during 1896. This salt was sold to the surrounding settlers.

**Saskatchewan.**—In 1921, the Senlac Salt Company operated a deposit near Senlac, Saskatchewan, for five months and produced 33 tons of common coarse salt. The open pan system of evaporation was used by this company. No further production has been recorded from this district.

**Alberta.**—Rock salt was discovered at Fort McMurray in 1920 in a drill hole at a depth of 648 feet. Shipments of salt commenced from the Fort McMurray district during 1925 and continued in 1926.

Table 341.—Production of Salt in Canada, 1886-1926

Year	Tons	Value \$	Year	Tons	Value \$	Year	Tons	Value \$
1886.....	62,359	227,195	1900.....	62,055	279,458	1914.....	107,038	493,648
1887.....	60,173	166,394	1901.....	59,428	262,328	1915.....	119,900	600,226
1888.....	59,070	185,460	1902.....	64,456	292,581	1916.....	132,903	717,653
1889.....	32,832	129,547	1903.....	62,452	297,517	1917.....	138,909	1,047,792
1890.....	43,754	198,857	1904.....	69,477	321,778	1918.....	131,727	1,285,039
1891.....	45,021	161,179	1905.....	67,340	320,858	1919.....	148,301	1,397,929
1892.....	45,486	162,041	1906.....	76,720	329,130	1920.....	209,855	1,544,724
1893.....	62,324	195,926	1907.....	72,697	342,315	1921.....	164,658	1,673,685
1894.....	57,199	170,687	1908.....	79,975	378,798	1922.....	181,794	1,628,323
1895.....	52,376	160,455	1909.....	84,037	415,219	1923.....	202,397	1,713,516
1896.....	43,960	169,693	1910.....	81,092	409,624	1924.....	207,979	1,374,780
1897.....	51,348	225,730	1911.....	91,582	443,004	1925.....	233,746	1,410,697
1898.....	57,142	248,639	1912.....	95,053	459,582	1926.....	262,547	1,480,149
1899.....	59,339	254,390	1913.....	100,791	491,280			
						<b>Total.....</b>	<b>4,044,292</b>	<b>24,067,826</b>

Table 342.—Production of Salt in Canada, by Grades, 1925 and 1926

Grade	1925			1926		
	Manu- factured	Sold	Value of salt sold (Not includ- ing pack- ages)	Manu- factured	Sold	Value of salt sold (Not includ- ing pack- ages)
	Tons	Tons	\$	Tons	Tons	\$
Table and dairy.....	47,452	46,760	713,571	50,642	50,905	762,491
Common fine.....	34,383	33,197	186,297	46,131	47,202	241,320
Common coarse.....	46,637	43,931	312,107	30,937	32,785	228,395
Land salt.....	5,133	5,125	21,826	4,170	3,965	16,865
Other grades.....	11,799	11,203	83,396	15,178	14,670	118,058
Brine for chemical works (Salt equivalent sold or used).....	93,500	93,500	93,500	113,020	113,020	113,020
<b>Total.....</b>	<b>238,904</b>	<b>233,746</b>	<b>1,410,697</b>	<b>260,078</b>	<b>262,547</b>	<b>1,480,149</b>
Value of packages.....			548,528			569,396
<b>Grand total.....</b>			<b>1,959,225</b>			<b>2,049,545</b>

Table 343.—Production in Canada, Imports, Exports and Consumption of Salt, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	207,979	1,374,780	233,746	1,410,697	262,547	1,480,149
IMPORTS—						
Salt, for the use of the sea or gulf fisheries	71,179	339,557	80,398	329,820	83,929	327,040
Salt, in bulk, n.o.p.....	68,199	332,649	73,166	327,364	75,965	393,747
Salt, n.o.p., in bags, barrels, etc.....	43,508	462,184	40,061	420,137	28,053	284,118
Salt, table, made by an admixture of other ingredients, when containing not less than 90 per cent of pure salt. (From April 1, 1926).....					454	31,689
<b>Total</b> .....	<b>182,886</b>	<b>1,134,390</b>	<b>193,625</b>	<b>1,077,321</b>	<b>188,401</b>	<b>1,036,594</b>
EXPORTS.....	965	10,795	2,324	26,678	1,164	19,423
APPARENT CONSUMPTION OF SALT.....	389,900	2,498,375	425,047	2,461,340	449,784	2,497,320

Table 344.—Principal Statistics of the Salt Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	10	2,205,184	371	432,261	*369,000	407,105	1,628,323
1923.....	11	2,406,992	368	412,597	356,794	404,046	1,713,516
1924.....	11	2,479,563	364	431,618	342,118	424,578	1,374,780
1925.....	12	2,563,508	402	467,487	315,368	(a)	1,410,697
1926.....	11	2,782,728	384	482,651	324,612	(a)	1,480,149

\* Fuel only.

(a) Data not available.

Table 345.—Capital Employed in the Salt Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	1,787,023	1,899,373
Cost of supplies and stocks on hand.....	262,831	270,076
Cash, trading and operating accounts and bills receivable.....	513,654	613,279
<b>Total</b> .....	<b>2,563,508</b>	<b>2,782,728</b>

Table 346.—Employees, Salaries and Wages in the Salt Industry in Canada, 1925 and 1926

	1925				1926			
	Number of employees		Total	Salaries and wages	Number of employees		Total	Salaries and wages
	Male	Female			Male	Female		
SALARIED EMPLOYEES.....	45	12	57	\$ 114,960	41	10	51	\$ 121,014
WAGE-EARNERS.....	310	35	345	352,527	300	33	333	361,637
<b>Total</b> .....	<b>355</b>	<b>47</b>	<b>402</b>	<b>467,487</b>	<b>341</b>	<b>43</b>	<b>384</b>	<b>482,651</b>

Table 347.—Wage-Earners in the Salt Industry in Canada, by Months, 1925 and 1926

Month	1925		1926		Month	1925		1926	
	Male	Female	Male	Female		Male	Female	Male	Female
January.....	279	27	280	27	July.....	337	32	306	34
February.....	271	28	279	30	August.....	322	31	306	33
March.....	292	31	305	32	September.....	329	34	286	33
April.....	323	30	327	32	October.....	325	37	283	37
May.....	319	31	317	30	November.....	307	40	296	42
June.....	313	30	294	33	December.....	285	33	270	35

Table 348.—Fuel and Electricity Used in the Salt Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	57,081	278,067	54,177	280,249
Lignite coal..... tons	1,665	10,359	2,763	19,065
Fuel oil..... Imp.gal.	5,600	1,120		
Gasoline..... Imp.gal.	600	168	5,600	1,168
Wood..... cords	40	200	30	150
Other fuel.....		6,315		6,461
Electric power..... k.w.h.	1,179,094	19,139	1,131,352	17,519
<b>Total.....</b>		<b>315,368</b>		<b>324,612</b>

Table 349.—Power Employed in the Salt Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	30	717	30	752
Internal combustion engines.....	4	71	3	62
<i>Total primary power.....</i>	<i>34</i>	<i>788</i>	<i>33</i>	<i>814</i>
Electric motors run by purchased power.....	48	658	54	659
<b>Total power employed.....</b>	<b>82</b>	<b>1,446</b>	<b>87</b>	<b>1,473</b>
Electric motors run by primary power in same plant.....	2	52	2	52
<i>Total electric motors.....</i>	<i>50</i>	<i>710</i>	<i>56</i>	<i>711</i>
Boilers.....	25	3,950	26	4,100

Table 350.—\*World Production of Salt, 1913 and 1922-1926

Country	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE</b>						
United Kingdom.....	2,203,732	1,889,176	1,886,882	2,045,762	1,933,590	1,727,443
Mauritius.....	(a) 394	1,500	1,500	1,500	1,500	1,500
Nigeria.....	(a) 394	400	400	400	400	400
Somaliland.....	(a) 394	1,547	1,707	1,446	2,336	.....
South-West Africa Territory.....	(a) 394	(a) 394	(a) 394	335	425	400
Sudan.....	4,601	9,000	9,000	9,000	9,000	9,000
Tanganyika Territory.....	(a) 394	2,389	1,887	4,556	4,006	3,105
Union of South Africa.....	42,837	74,609	61,188	69,258	58,316	.....
Canada.....	89,992	162,316	180,711	185,695	208,702	234,417
<b>West Indies—</b>						
Bahamas.....	26,000	3,036	2,680	1,570	1,291	7,358
Turks & Caicos Islands.....	.....	65,650	58,060	52,327	62,432	53,958
Ceylon.....	13,190	38,997	28,279	9,263	20,263	15,962
Cyprus.....	(a) 394	2,974	766	22	1	.....
India.....	1,472,764	1,861,210	1,900,829	1,623,475	1,295,144	1,638,749
Weihaiwei.....	.....	2,000	2,000	2,000	2,000	2,000
Australia.....	64,981	98,657	98,286	110,687	126,251	139,101
Total.....	3,918,491	4,213,455	4,234,175	4,117,296	3,725,651	3,833,393
<b>FOREIGN COUNTRIES</b>						
Austria.....	358,887	142,079	81,953	109,382	128,705	142,809
Bulgaria.....	(a) 394	20,000	(a) 394	36,000	25,000	(a) 394
Czecho-Slovakia.....	See Austria	126,118	131,925	122,768	75,591	.....
France.....	1,261,364	1,031,761	1,127,031	1,267,881	(b) 1,327,049	(b) 1,419,216
Germany.....	2,034,391	2,995,947	1,845,404	1,941,973	2,188,347	2,401,500
Greece.....	18,906	66,415	58,945	67,440	3,507	.....
Italy.....	633,722	777,608	752,376	794,346	900,922	753,937
Jugoslavia.....	26,843	43,167	45,000	48,079	53,623	(a) 394
Netherlands.....	(a) 394	27,879	25,969	31,895	34,191	(a) 394
Poland.....	See Russia	290,655	357,468	365,217	412,546	450,412
Rumania.....	329,613	280,628	301,684	297,895	325,047	338,532
Russia.....	1,963,405	782,305	924,016	998,443	1,333,864	1,554,350
Spain.....	600,612	669,937	704,322	952,744	846,316	1,079,634
Switzerland.....	506,718	63,253	66,951	72,851	73,933	(a) 394
Algeria.....	26,566	19,883	24,676	23,163	26,571	(a) 394
Belgian Congo.....	79	(a) 394	80	80	80	80
Egypt (exports).....	154,640	183,823	154,758	206,584	207,645	177,344
Eritrea (estimated).....	19,678	20,000	20,000	20,000	20,000	20,000
Tripoli (exports).....	(a) 394	11,606	(a) 394	(a) 394	(a) 394	(a) 394
Tunisia.....	(a) 394	51,000	72,000	121,619	126,378	(a) 394
Dutch West Indies.....	13,201	18,172	11,605	8,751	18,087	(a) 394
Mexico (estimated).....	65,923	66,000	66,000	66,000	66,000	66,000
Panama.....	(a) 394	813	(a) 394	(a) 394	(a) 394	(a) 394
United States.....	4,298,638	6,065,044	6,366,708	6,074,210	6,604,909	6,581,786
Argentina.....	54,034	92,200	(a) 394	120,464	74,160	(a) 394
Chile.....	19,244	33,201	37,627	35,513	28,863	(a) 394
Colombia.....	28,534	29,000	29,000	29,000	29,000	29,000
Peru.....	24,040	25,706	26,096	28,513	27,747	(a) 394
Venezuela.....	(a) 394	(a) 394	30,000	30,000	30,000	30,000
China including Kwantung Peninsula (estimated).....	1,700,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Dutch East Indies.....	100,449	166,963	122,066	129,741	420,908	(a) 394
Formosa.....	72,869	135,800	235,400	134,000	136,000	(a) 394
French Indo-China.....	(a) 394	(a) 394	11,215	4,184	5,861	20,152
Japan.....	629,721	654,407	473,195	626,929	657,935	(a) 394
Portuguese India.....	11,807	(a) 394	12,000	12,000	12,000	(a) 394
Siam.....	(a) 394	26,123	32,428	39,923	34,639	(a) 394
Turkey.....	(a) 394	100,000	100,000	100,000	100,000	100,000
Philippine Islands.....	19,186	32,350	30,803	28,454	30,198	(a) 394
Total.....	14,973,070	17,049,843	16,277,701	16,946,042	18,385,622	17,164,752
Grand total.....	18,891,561	21,263,298	20,511,876	21,063,338	22,111,273	20,998,145

\*Source prior to 1925.—Imperial Institute publications. Data for 1925 and 1926 obtained directly from the statistical bureaus of the different countries.

(a) Data not available.

(b) Exclusive of sea salt.

## TALC AND SOAPSTONE

**Canada**—Shipments of talc and soapstone ranging from 50 tons to 1,420 tons were made from Canadian deposits during the period 1886 to 1906. Prior to 1900 the production consisted mainly of impure talc and soapstone shipped from Quebec. It was not until 1900 that mining operations were commenced on the high grade talc deposits of the Madoc district. Ground talc was shipped from this district in 1906. Production advanced during the ensuing years until in 1920 the high mark for the industry was reached, namely, 21,671 tons valued at \$166,934,

an average of \$7.70 per ton. In the following year the 4 companies operating employed 34 men and produced 10,124 tons with an average value of \$14.28 per ton. The 7 companies active in 1925 employed 82 men and shipped 14,474 tons valued at \$205,835. The improvement shown in the talc and soapstone industry in Canada during 1925 was continued throughout 1926 and shipments amounted to 15,767 tons valued at \$217,195.

The Ontario production was made up of talc obtained from deposits in Hastings county and soapstone from the Grace mine near Vermilion Bay. Practically all of the Quebec shipments consisted of soapstone blocks for use in lining the alkali recovery furnaces of sulphate (kraft) pulp mills.

Importations of talc or soapstone, ground or unground, into Canada during 1926 were recorded at 4,213 tons evaluated at \$89,026, and exports of refined talc totalled 10,823 tons at \$125,633.

The capital employed by the 6 firms operating in this industry in Canada was reported at \$681,434 in 1926. Employment was furnished 9 salaried employees and 83 wage-earners; their total earnings were \$74,634. The expenditure for fuel and electricity was \$25,023. Primary power installation consisted of 24 units rated at 823 h.p.

**Quebec.**—Although it is known that early settlers made use of soapstone from deposits in Quebec for lining fireplaces and ovens and for footwarmers, the first official records of the mining of soapstone are for 1871 when 300 tons valued at \$1,800 were shipped from a deposit in Bolton township, Brome county. Small shipments were made from Quebec deposits from 1886 to 1889. In 1920, the production amounted to 150 tons with a valuation of \$1,050. Soapstone blocks totalling 150 tons worth \$4,950 were shipped in 1922 from Thetford township to sulphate process pulp mills for use in lining the alkali recovery furnaces. In 1926 shipments reached the total of 885 tons valued at \$38,209 and consisted principally of soapstone blocks.

An excerpt from a report on the soapstone industry by Hugh S. Spence follows:—

Canadian sulphate pulp mills are estimated to use in the neighbourhood of 2,500 tons of soapstone per year. This stone is employed in the form of sawn blocks and bricks for building the furnaces used in recovery of the alkali or black liquor from the digestors, and is the only natural product known that will satisfactorily resist the action of the molten alkali. Since the recovery of such alkali is of great import in kraft mill practice, it follows that soapstone is a very important material to the pulp mill operators.

In the province of Quebec, however, the most active development has been undertaken, operations here having been helped by the fact that many of the largest kraft mills are situated in the province, within a relatively short rail haul from the deposits. Production has, in the main, been confined so far to a single operator, the Robertsonville Soapstone Quarry Company, which has opened up a number of small quarries in the eastern portion of the serpentine belt, with which are associated the principal asbestos mines. Small portable sawing units, driven by individual gasoline engines, are used to cut the stone into blocks and bricks of the dimensions specified by the mills. Most of the quarries opened by the company in its initial stages have now been abandoned, and work is at present confined to a single quarry, where the stone has been found to be of superior quality to that hitherto worked. It is the intention of the company to instal permanent equipment at this point, and to undertake operations on a larger scale, with a view to taking care of the entire soapstone requirements of Eastern Canada. It is also proposed to grind the quarry waste, making products suited to the roofing and foundry trades.

While a certain amount of soapstone continues to be imported from the United States and from Scandinavian countries, it is gratifying to note that Canada seems now well on the way to filling her requirements in respect of this material from within her own borders.

**Ontario.**—Madoc is the centre of the production of talc in Ontario. In 1899 the Henderson, the first mine in this district, was opened up on concession XIV, lot 14, Huntingdon township and a small shipment of crude talc was made to the United States during that year. The first mill for the fine grinding of talc in Canada was erected at Madoc in 1906 and since then the Ontario production has increased materially. Operations on the Eldorado property, about 2 miles northwest of Eldorado station, were commenced in 1911 and were discontinued in 1920. The present Connolly mine was discovered in 1911 and mining operations commenced on it during the following year. A mill was constructed on the property in 1916 and operations have been almost continuous since that date.

Work was started on the H. H. Wood soapstone deposit near Mine Centre in 1922. During that year and also in 1923 some experimental shipments were made in addition to the sawing and sale of a small quantity of steel workers' crayons. Mining was commenced on the Grace property at Vermilion Bay in 1924 and shipments have been reported from this mine during the past two years.

**British Columbia.**—The Lucky Jane claim near D'Arcy station on the Pacific Great Eastern Railway was operated in 1916 and 1917. Operations on the Eagle deposit near Wolf creek, Vancouver Island, commenced early in 1919 and continued to the end of 1925. The crude material was shipped to the operator's mill at Sydney, Vancouver island, during the period 1919 to 1921 but in the latter year a plant was constructed on the property. Mill output consisted of: first grade, for use in the paint industry; second grade, for paper mills; and coarse for use in the preparation of roofing paper.

Table 351.—Production of Talc and Soapstone in Canada, 1886-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	50	400	1900.....	1,420	6,365	1914.....	10,808	40,418
1887.....	100	800	1901.....	259	842	1915.....	11,885	40,554
1888.....	140	280	1902.....	689	1,804	1916.....	13,104	49,423
1889.....	195	1,170	1903.....	990	2,739	1917.....	15,803	76,539
1890.....	917	1,239	1904.....	840	1,875	1918.....	18,169	119,197
1891.....			1905.....	500	1,800	1919.....	18,642	116,295
1892.....	1,374	6,240	1906.....	1,234	3,030	1920.....	21,671	166,934
1893.....	717	1,920	1907.....	1,534	4,602	1921.....	10,124	144,565
1894.....	916	1,640	1908.....	1,016	3,048	1922.....	13,195	188,458
1895.....	475	2,138	1909.....	4,350	10,300	1923.....	10,366	150,507
1896.....	410	1,230	1910.....	7,112	22,308	1924.....	11,332	154,480
1897.....	157	350	1911.....	7,300	22,100	1925.....	14,474	205,835
1898.....	405	1,000	1912.....	8,270	23,132	1926.....	15,767	217,195
1899.....	450	1,960	1913.....	12,250	45,980			
<b>Total.....</b>							<b>239,410</b>	<b>1,840,692</b>

Table 352.—Production in Canada, Imports and Exports of Talc and Soapstone, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Soapstone.....	449	20,273	768	32,655	995	42,609
Talc.....	10,883	134,207	13,706	173,180	14,772	174,586
<b>Total.....</b>	<b>11,332</b>	<b>154,480</b>	<b>14,474</b>	<b>205,835</b>	<b>15,767</b>	<b>217,195</b>
<b>IMPORTS—</b>						
Talc or soapstone, ground or unground*..	2,968	59,800	4,568	91,288	4,213	89,026
<b>EXPORTS—</b>						
Talc, crude.....						
Talc, refined.....	7,876	98,571	10,461	124,217	10,823	125,633

\*Nine months only in 1924.

Table 353.—Principal Statistics of the Talc and Soapstone Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	7	594,019	81	83,509	*2,808	50,155	188,458
1923.....	6	679,337	60	59,321	15,504	49,239	150,507
1924.....	6	695,786	61	59,220	18,351	(a)	154,480
1925.....	7	744,037	92	74,519	22,218	(a)	205,835
1926.....	6	681,434	92	74,634	25,023	(a)	217,195

\*Fuel only.

(a) Data not available.

Table 354.—Capital Employed in the Talc and Soapstone Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	567,298	600,797
Cost of all supplies and stocks on hand.....	36,070	36,801
Cash, trading and operating accounts and bills receivable.....	140,669	43,836
<b>Total.....</b>	<b>744,037</b>	<b>681,434</b>

Table 355.—Employees, Salaries and Wages in the Talc and Soapstone Industry in Canada, 1925 and 1926

	1925				1926			
	Number employees		Total	Salaries and wages	Number of employees		Total	Salaries and wages
	Male	Female			Male	Female		
				\$				\$
Salaried Employees.....	8	2	10	14,080	8	1	9	14,940
Wage-Earners.....	82		82	60,439	83		83	59,694
<b>Total.....</b>	<b>90</b>	<b>2</b>	<b>92</b>	<b>74,519</b>	<b>91</b>	<b>1</b>	<b>92</b>	<b>74,634</b>

Table 356.—Wage-Earners in the Talc and Soapstone Industry in Canada, by Months, 1925 and 1926

Month	1925	1926	Month	1925	1926
January.....	63	59	July.....	85	80
February.....	66	74	August.....	77	78
March.....	66	75	September.....	73	75
April.....	66	85	October.....	73	72
May.....	72	80	November.....	61	67
June.....	82	80	December.....	60	63

Table 357.—Fuel and Electricity Used in the Talc and Soapstone Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	296	2,200	493	3,782
Gasoline..... Imp. gal.	1,183	384	310	117
Wood..... cords	610	2,340	746	2,610
Electric power..... k.w.h.	1,563,000	17,294	1,400,000	18,514
<b>Total.....</b>		<b>22,218</b>		<b>25,023</b>

Table 358.—Power Employed in the Talc and Soapstone Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	7	84	3	170
Internal combustion engines.....	5	69	8	58
<i>Total primary power.....</i>	<i>12</i>	<i>153</i>	<i>11</i>	<i>228</i>
Electric motors run by purchased power.....	9	320	13	595
<b>Total power employed.....</b>	<b>21</b>	<b>473</b>	<b>24</b>	<b>823</b>
Electric motors run by primary power in same plant.....	4	225		
<i>Total electric motors.....</i>	<i>13</i>	<i>545</i>	<i>13</i>	<i>595</i>
Boilers.....	3	180	4	250

Table 359.—\*World Production of Talc and Soapstone, 1913 and 1922-1926

(Long tons)

Country	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE</b>						
United Kingdom.....	40	50	186			
Union of South Africa.....		304	317	670	85	41
Canada.....	10,937	11,781	9,255	10,118	12,923	14,078
India.....	2,524	4,754	7,024	2,852	2,809	9,466
Australia.....	104	468	622	859	1,052	911
<b>Total.....</b>	<b>13,605</b>	<b>17,357</b>	<b>17,404</b>	<b>14,499</b>	<b>16,869</b>	<b>24,496</b>
<b>FOREIGN COUNTRIES</b>						
Austria (exports).....	7,953	13,294	7,369	9,433	12,676	13,624
China.....		284	188	218	50	(a)
France.....	59,208	47,396	47,967	68,250	68,256	(a)
Germany (Bavaria).....		4,440	1,876	3,933	3,405	3,772
Greece.....			130	137	92	(a)
Italy.....	44,622	26,059	30,649	28,171	33,310	42,343
Norway (exports).....	2,392	7,695	8,764	11,596	8,887	7,486
Spain.....	4,336	3,029	1,951	1,434	897	1,632
Sweden.....		2,030	2,391	2,527	2,336	(a)
United States.....	156,994	177,396	175,618	181,983	(b) 162,727	(b) 162,113
Uruguay (exports).....		599	980	(a)	899	(a)
Japan.....		48,244	35,341	41,194	43,385	(a)
<b>Total.....</b>	<b>275,505</b>	<b>330,466</b>	<b>313,224</b>	<b>349,176</b>	<b>336,920</b>	<b>230,970</b>
<b>Grand total.....</b>	<b>289,110</b>	<b>347,823</b>	<b>330,628</b>	<b>363,675</b>	<b>353,789</b>	<b>255,466</b>

\*Source prior to 1925—Imperial Institute publications. Data for 1925 and 1926 obtained directly from the statistical bureaux of the different countries.

(a) Data not available.

(b) Talc only.

## MISCELLANEOUS NON-METAL MINING INDUSTRIES

Included under this heading are the following non-metallic minerals:

Actinolite	Mineral waters
Barytes	Natro-alunite
Bituminous sands	Phosphate
Fluorspar	Pyrites
Lithium minerals	Silica brick
Magnesite	Sodium carbonate
Magnesium sulphate	Sodium sulphate

Statistics relating to capital, labour, fuel and power are combined for these industries and are shown in Tables 360 to 386.

In addition to the foregoing, data are also shown for production, imports and exports of sulphuric acid.

**Table 360.—Principal Statistics in the Miscellaneous Non-Metal Mining Industries in Canada, 1922-1926**

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	34	4,839,944	292	183,127	*20,829	131,615	700,824
1923.....	27	4,682,838	185	254,088	56,817	151,501	296,814
1924.....	33	2,428,619	136	82,937	14,948	129,904	240,718
1925.....	28	2,080,481	218	149,655	58,437	(a)	273,327
1926.....	28	2,400,850	193	201,468	79,877	(a)	386,892

\*Fuel only.

(a) Data not available.

**Table 361.—Capital Employed in the Miscellaneous Non-Metal Mining Industries in Canada, 1925 and 1926**

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, machinery and tools.....	1,933,786	2,234,931
Cost of supplies and stocks on hand.....	86,229	109,812
Cash, trading and operating accounts and bills receivable.....	60,466	56,107
<b>Total.....</b>	<b>2,080,481</b>	<b>2,400,850</b>

**Table 362.—Employees, Salaries and Wages in the Miscellaneous Non-Metal Mining Industries, 1925 and 1926**

	1925				1926			
	Number of employees			Salaries and wages	Number of employees			Salaries and wages
	Male	Female	Total		Male	Female	Total	
				\$				\$
Salaried employees.....	10	3	13	29,103	20	2	22	35,790
Wage-earners.....	205		205	120,552	171		171	165,678
Total.....	215	3	218	149,655	191	2	193	201,468

**Table 363.—Wage-Earners in the Miscellaneous Non-Metal Mining Industries, by Months, 1925 and 1926**

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	63	122	July.....	130	175
February.....	60	117	August.....	148	142
March.....	73	112	September.....	171	153
April.....	84	108	October.....	149	186
May.....	76	173	November.....	128	184
June.....	87	182	December.....	148	131

Table 364.—Fuel and Electricity Used in the Miscellaneous Non-Metal Mining Industries in Canada, 1925 and 1926

	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal..... tons	3,871	29,136	7,775	43,496
Fuel oil..... Imp. gal.	240,550	24,085	313,719	29,198
Gasoline..... Imp. gal.	1,960	743	480	131
Wood..... cords	868	1,724	632	1,365
Electricity..... k.w.h.		2,749	765,883	5,687
<b>Total.....</b>		<b>58,437</b>		<b>79,877</b>

Table 365.—Power Employed in the Miscellaneous Non-Metal Mining Industries in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	3	130	4	305
Internal combustion engines.....	6	49	2	9
<i>Total primary power.....</i>	<i>9</i>	<i>179</i>	<i>6</i>	<i>314</i>
Electric motors run by purchased power.....	30	1,303	25	1,143
<b>Total power employed.....</b>	<b>39</b>	<b>1,482</b>	<b>31</b>	<b>1,457</b>
Electric motors run by primary power in same plant.....	3	67	7	282
<i>Total electric motors.....</i>	<i>33</i>	<i>1,370</i>	<i>32</i>	<i>1,425</i>
Boilers.....	6	267	5	425

## ACTINOLITE

**Canada.**—Actinolite, which is a calcium-magnesium-iron silicate, is used in the manufacture of coal-tar roofing compounds. Mining of this mineral in Canada commenced in 1883. Canadian deposits from which production has been derived are located in Elzevir and Kaladar townships, Hastings county: Actinolite is the centre of the industry. In 1902 and 1903 production was at its peak and 550 tons were shipped; however, during the following six years, no operations were carried on. Shipments recommenced in 1910 and have continued up to the present. Annual production of ground actinolite during the past 8 years had ranged between 40 tons and 100 tons. In 1926, shipments to the United States amounted to 80 tons valued at \$1,000 as compared with 40 tons at \$500 shipped in 1925.

Table 366.—Production of Actinolite in Canada, 1897-1926

Year	Tons	Value	Year	Tons	Value
		\$			\$
1897.....	205	1,845	1916.....	250	2,750
1898-1900.....			1917.....	120	1,320
1901.....	521	3,126	1918.....	228	2,508
1902.....	550	4,400	1919.....	80	880
1903.....	550	3,108	1920.....	100	1,160
1904-1909.....			1921.....	78	975
1910.....	30	330	1922.....	50	575
1911.....	67	736	1923.....	53	583
1912.....	92	1,000	1924.....	90	1,225
1913.....	66	720	1925.....	40	500
1914.....	119	1,304	1926.....	80	1,000
1915.....	220	2,420			
			<b>Total.....</b>	<b>3,589</b>	<b>32,465</b>

## BARYTES

**Canada.**—Deposits of barytes at Five Islands, Colchester county and Brookfield, Hants county, Nova Scotia were first operated between 1865 and 1870. These deposits have produced about 5,000 tons of barytes. The McKellar Island deposit in Thunder Bay district, Ontario, in the course of its operations produced several thousand tons of ore. Work ceased on this property in 1894.

Large deposits of barytes at Lake Ainslie, Cape Breton island, were opened up in 1894 and operations in this district have been practically continuous since that date. Between 1900 and 1903 the Cap Rouge deposit in North Cheticamp district was operated.

During 1918 a deposit in Langmuir township, Ontario, was operated and a mill for grinding and preparing barytes was completed shortly before the close of navigation. A shipment of 60 tons was made. Development work was done on the Bellew mine in North Burgess township in 1918. A deposit near Tionaga station was operated in 1923 and 200 tons of barytes were shipped.

Barytes shipped during 1926 amounted to 100 tons valued at \$2,307 as compared with 95 tons worth \$2,259 produced in 1925. The total output as in the past two years was obtained from the Johnstone mine at Lake Ainslie, Inverness county, Nova Scotia.

Importations of barytes into Canada show little variation annually, ranging between 2,300 tons and 2,450 tons. The 1926 imports were recorded at 2,422 tons, while in 1925 a total of 2,433 tons was brought into Canada.

**Nova Scotia.**—The Five Islands and Brookfield deposits were first worked between 1865 and 1870, but operations here practically ceased in 1880. Approximately 5,000 tons have been shipped from these properties.

A description of the Five Islands deposit contained in H. S. Spence's report on *Barium and Strontium* follows:—

The deposit lies about 2 miles north of the village of Five Islands, on the north shore of the Minas basin. Shipment of ore can be made by boat. All the barytes shipped from the property was crude ore, and most of it went to the United States. Shipments were also made to the paint works of the Dolphin Manufacturing Company, St. Catharines, Ont.

The initial work on the deposit was carried out by Mr. Sewell, of Bath, Maine, and from 1866 to 1876, about 3,000 tons of barytes are reported to have been extracted and shipped. Beyond some work of a prospecting nature in 1907, no further mining appears to have been conducted since 1876.

The Stewiacke deposit near Brookfield station was opened up about 1868 and work on it ceased in 1899.

Between 1870 and 1880 the Sellar's mine at Hodson, five miles from River John, Pictou county, shipped about 500 tons of barytes to Portland, Maine.

Production in the Lake Ainslee district, Inverness county, began in 1894 with some shipments of barytes from the Johnston mine to Halifax for grinding. The Johnston mine continues to furnish a small production annually for use in the paint industry. The East Lake Ainslee group of properties was opened up in 1903 and operated about five years, producing between 7,000 tons and 8,000 tons.

**Quebec.**—Shipments of barytes were made from a deposit in Hull township during the period 1898-1900. This barytes was shipped to Montreal, for use in the manufacture of paint. Operations on this deposit ceased about 1900.

**Ontario.**—The McKellar Island deposit in Thunder Bay District, was discovered in 1869 and work on it commenced several years later. Considerable tonnages of barytes have been shipped from this property; the last shipment amounting to 500 tons was made in 1894.

In 1910 the first barytes deposit was discovered in northern Ontario in Langmuir township. Mining operations on this property commenced in 1915 and in 1918 a mill for the grinding and preparing of barytes for market was completed. During that year a trial shipment of 60 tons was made. Following the discovery of the Langmuir deposit, the Biederman claim in Cairo township; the Eby claim in Lawson township and the Ontario Barium Company's deposit in

Yarrow township were located. The Tionaga property in Penhorwood township was discovered in 1917. In the following years some development work was done on the deposit and in 1923 a shipment of 200 tons was made. In Bathurst, Levant and North Burgess townships development work has been done on barytes occurrences.

Table 367.—Production of Barytes in Canada, 1885-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1885.....	300	1,500	1899.....	720	4,402	1913.....	641	5,410
1886.....	3,864	19,270	1900.....	1,337	7,605	1914.....	612	6,169
1887.....	400	2,400	1901.....	653	3,842	1915.....	550	6,875
1888.....	1,100	3,850	1902.....	1,096	3,957	1916.....	1,368	19,393
1889.....			1903.....	1,163	3,931	1917.....	3,490	54,027
1890.....	1,842	7,543	1904.....	1,382	3,702	1918.....	640	10,165
1891.....			1905.....	3,360	7,500	1919.....	468	8,154
1892.....	315	1,260	1906.....	4,000	12,000	1920.....	751	22,983
1893.....			1907.....	1,344	3,000	1921.....	270	9,567
1894.....	1,081	2,830	1908.....	4,312	19,021	1922.....	289	9,537
1895.....			1909.....	179	1,120	1923.....	409	8,548
1896.....	145	715	1910.....			1924.....	151	3,308
1897.....	571	3,060	1911.....	50	400	1925.....	95	2,259
1898.....	1,125	5,533	1912.....	464	5,104	1926.....	100	2,307
Total.....							40,637	292,247

Table 368.—Production in Canada and Imports of Barytes, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....	151	3,308	95	2,259	100	2,307
IMPORTS—						
Barium peroxide.....	37	11,883	31	7,488	11	2,311
Blanc fixé et satin white.....	354	21,742	303	19,343	427	22,645
Barytes.....	2,323	48,693	2,433	50,566	2,422	48,011

BITUMINOUS SANDS

Canada.—Bituminous sands are found in the Fort McMurray district, Alberta. This deposit is the largest occurrence of solid asphaltic material known. Considerable research work has been done in connection with these sands by the *Scientific and Industrial Research Council* of Alberta and the *Dominion Department of Mines*. Shipments of bituminous sands up to 1924 amounted to 531 tons. In 1926, the production was 528 tons valued at \$2,112, as against 1,148 tons at \$4,594 shipped in 1925. During these two years, the McMurray Asphaltum and Oil Company and the Federal Department of Mines were the only producers.

Table 369.—Production of Bituminous Sands in Canada and Imports of Asphalt, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Bituminous sands.....	531	2,127	1,148	4,594	528	2,112
IMPORTS—						
Asphalt, solid.....	17,070	283,658	12,583	292,218	19,663	404,848
Asphalt, not solid.....		10,536		13,288		17,510
Asphaltum oil.....		37,794		12,147		21,998
Total.....		331,988		317,653		444,356

## FLUORSPAR

**Canada.**—The first recorded shipment of fluorspar from a Canadian deposit was made in 1905, when 12 tons were shipped from a mine in Madoc township, Ontario. Five years later about 200 tons were mined in Huntingdon township of which quantity 2 tons were shipped. In 1911, the metallurgical works at Deloro and the steel foundries at Welland received small shipments. The next year a further small production was recorded, however in the following three years no shipments were made. During 1916, Ontario companies shipped 1,284 tons and increasing tonnages were produced during 1917 and 1918. In the latter year British Columbia became a factor in this industry as the Rock Candy mine near Grand Forks commenced operations.

The largest production from Canadian deposits took place in 1920 when 11,235 tons were shipped. Four mines were operated in that year employing 119 men whose wages totalled \$123,050.

No shipments of fluorspar were made from Canadian deposits during 1926. In 1925 the production amounted to 3,886 tons with a valuation of \$19,234. Importations of fluorspar into Canada increased considerably in 1926 and amounted to 9,968 tons worth \$97,482 as against 5,111 tons appraised at \$60,458 in 1925.

**Ontario.**—A small shipment of fluorspar was made in 1905 from a deposit near Madoc, to Port Hope. During 1910 considerable development work was done on a deposit in Huntingdon township and 200 tons of ore were extracted. In the following year 34 tons were shipped to Deloro and Welland and in 1912 a shipment of 40 tons was made to Copper Cliff. Three properties were operated near Madoc in 1916 from which 525 tons were shipped to the United States and 759 tons to Canadian steel companies. In 1918 eight deposits were in operation in the Madoc district and shipments totalled 7,187 tons averaging \$20.97 per ton. The major part of these shipments went to Hamilton, Welland, Toronto and other Ontario points, in addition to which some exports were made to the United States. This was the high mark for the industry in Ontario and employment was furnished 129 men earning \$85,783. Production from 1921 to 1925 was practically negligible while in 1926 shipments ceased entirely.

**British Columbia.**—Fluorspar production in British Columbia commenced in 1918 with the opening up of the Rock Candy mine near Grand Forks. The 1918 shipments amounted to 175 tons; the following year 1,638 tons were shipped; and in 1920, the maximum production for the province, namely, 7,477 tons was recorded. Production was fairly well maintained, during the next two years however, in 1923 only 75 tons were shipped and in 1924 none was produced. The mine was re-opened for three months in 1925 and 3,874 tons were taken out, but in 1926 there were no shipments. When active the concentrating mill on this property produced 88.5 per cent calcium fluoride and 5.3 per cent silica. This material is shipped to Trail for the manufacture of hydrofluosilicic acid. In addition to this local consumption considerable quantities have been exported to the United States. The United States tariff on importations of fluor-spar is \$5.60 per ton.

Table 370.—Production of Fluorspar in Canada, by Provinces, 1905-1926

	Ontario		British Columbia		Canada	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1905.....	12				12	
1906-1909.....						
1910.....	2	15			2	15
1911.....	34	238			34	238
1912.....	40	240			40	240
1913-1915.....						
1916.....	1,284	10,238			1,284	10,238
1917.....	4,249	68,756			4,249	68,756
1918.....	7,187	150,779	175	5,250	7,362	156,029
1919.....	3,425	59,281	1,638	38,556	5,063	97,837
1920.....	3,758	68,475	7,477	171,971	11,235	240,446
1921.....	116	1,744	5,403	134,523	5,519	136,267
1922.....	284	3,905	4,219	98,233	4,503	102,138
1923.....	64	597	75	1,135	139	1,732
1924.....	76	1,343			76	1,343
1925.....	12	200	3,874	19,034	3,886	19,234
1926.....						
<b>Total.....</b>	<b>20,543</b>	<b>365,811</b>	<b>22,861</b>	<b>468,702</b>	<b>43,404</b>	<b>834,513</b>

Table 371.—Production in Canada and Imports of Fluorspar, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Ontario.....	76	1,343	12	200		
British Columbia.....			3,874	19,034		
<b>Total.....</b>	<b>76</b>	<b>1,343</b>	<b>3,886</b>	<b>19,234</b>		
IMPORTS—						
Hydrofluosilicic acid.....	.01	40	2.18	636	2	565
Fluorspar.....	4,355	50,158	5,111	60,458	9,968	97,482

## LITHIUM MINERALS

**Canada.**—In a statement prepared by J. F. Wright, *Federal Department of Mines*, Ottawa, Canada, on the subject of lithium minerals, there are the following remarks:—

An outcrop of massive lepidolite was discovered in July, 1924, about one mile south of the Winnipeg river, some 10 miles east and a little north of Pointe du Bois. The Manitoba lithium deposits are the only ones of possible commercial value known within the British Empire.

At the Silver Leaf Mining Syndicate deposit, the lithium minerals occur in pockets and lenses in the central portion of a body of pegmatite which is exposed for 125 feet in a general east-west direction and across an average width of 80 feet. An analysis of a hand-picked sample, judged to represent approximately the lithium-bearing rock after the gangue has been removed, gave 4.76 per cent lithia ( $\text{Li}_2\text{O}$ ). There is estimated to be between 2,500 and 3,000 tons of this type of ore for each 10 feet in depth within a horizontal area equal to that at the surface. Two lens-shaped bodies of lepidolite, or a lithia mica of like character, estimated to contain about 540 tons of lithia ore for each 10 feet in depth and averaging 3.87 per cent lithia, occur near the south side of the pegmatite mass. This lithia mica contains only one-tenth of one per cent iron ( $\text{Fe}_2\text{O}_3$ ), and therefore probably will be found satisfactory for the manufacture of opal, white and flint glass."

Active development commenced in 1925, camps being put up, and a compressor, drills, and gasoline engines installed. Three miles of pole tram-line and winter road were built to a point on the Winnipeg river a short distance below Lamprey Falls. A considerable tonnage of ore has been blasted out and some small shipments made to England, Germany and the United States. Transportation is not difficult as barges may be floated down the river to the railhead, Pointe du Bois.

## MAGNESITE

**Canada.**—Magnesite was discovered in Grenville township in 1900 but it was not until 1907 that work on a small scale was started on the deposits. The following year 120 tons were shipped for the manufacture of carbonic acid gas for the aerated waters industry and for use in making flooring cement.

The cutting off of the Austrian supply of magnesite to North America in 1914 brought attention to the Grenville deposits as a substitute in the manufacture of refractory brick and lining for metallurgical furnaces.

Operations in 1915 accounted for the employment of 110 men whose wages amounted to \$23,607 and the year's production was 14,779 tons. The next year 183 men were employed earning \$144,987 and producing 55,413 tons. From the point of tonnage produced 1917 was the record year for the magnesite industry in Canada as 58,090 tons were shipped with an average value of \$12.54 per ton; 296 men were on the payrolls with wages totalling \$194,864. Advances in prices took place in 1918 and consequently, although the production of 39,365 tons was 32.5 per cent less than the previous year, the value of \$1,016,765 was a record one for the industry. In 1918 employment was furnished 305 men who received \$326,417.

The hydromagnesite deposits near Atlin, British Columbia, were operated during 1915 and 1916; shipments recorded for the latter year amounted to 635 tons and were made to the eastern United States and to Great Britain. During 1921 a further shipment of 803 tons was made from these deposits. However, there has been no production since that date.

The Canadian production fell off sharply in 1921 to 3,730 tons but recovered somewhat in 1923 to 4,801 tons. In 1925 shipments totalled 5,576 tons valued at \$122,325; during 1926 a total of 4,571 tons were shipped with a valuation of \$137,431.

All the magnesite mined during 1926 was produced in the province of Quebec and was sold in two forms, namely, dead-burned and calcined. Dead-burned magnesite is used entirely in the metallurgical industry as a refractory lining for furnaces. Calcined magnesite is used as a plastic material for floors and walls in buildings and also in the manufacture of pipe and furnace coverings, as it has strong insulating properties.

Exports of calcined magnesite were recorded at 653 tons worth \$19,587 in 1926 as compared with 834 tons at \$21,401 exported in the previous year.

The New Tariff Act of 1922 on Imports into United States, which came into effect in September, provided the following duties on the various forms of magnesite; Crude magnesite,  $\frac{5}{16}$  of 1 cent per pound; caustic calcined magnesite,  $\frac{5}{8}$  of 1 cent per pound; dead burned and grain magnesite, not suitable for manufacture into oxychloride cements,  $\frac{2}{40}$  of 1 cent per pound.

Table 372.—Production of Magnesite in Canada, 1908-1926

Year	Tons	Value	Year	Tons	Value
		\$			\$
1908.....	120	840	1918.....	39,365	1,016,765
1909.....	330	2,508	1919.....	11,273	328,465
1910.....	323	2,160	1920.....	18,378	512,756
1911.....	991	5,531	1921.....	3,730	81,320
1912.....	1,714	9,645	1922.....	2,849	76,294
1913.....	515	3,335	1923.....	4,801	134,382
1914.....	358	2,240	1924.....	3,873	101,356
1915.....	14,779	126,584	1925.....	5,576	122,325
1916.....	55,413	563,829	1926.....	4,571	137,431
1917.....	58,090	728,275	<b>Total.....</b>	<b>227,049</b>	<b>3,956,041</b>

Table 373.—Production in Canada, Imports and Exports of Magnesite, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Crude, mined.....	10,485		4,219		12,598	
Crude, calcined.....	5,162		6,210		9,870	
<b>PRODUCTION—</b>						
Crude.....			1,507	6,406		
Calcined.....	1,535	30,216	4,069	115,919	4,571	137,431
Dead-burned.....	2,338	71,140				
<b>Total.....</b>	<b>3,873</b>	<b>101,356</b>	<b>5,576</b>	<b>122,325</b>	<b>4,571</b>	<b>137,431</b>
<b>IMPORTS—</b>						
Magnesia pipe covering.....		121,046		108,681		122,411
Magnesite.....	280	8,980	111	4,528	150	6,746
Magnesite firebrick.....		91,553		75,161		66,429
<b>EXPORTS—</b>						
Magnesite, calcined or dead burned.....	293	8,520	834	21,401	653	19,587

Table 374.—World Production of Magnesite, 1913 and 1922-1926

(Long tons)

Producing country and description	1913	1922	1923	1924	1925	1926
<b>BRITISH EMPIRE</b>						
Cyprus—						
Crude magnesite.....		881	280	220		
Union of South Africa—						
Crude magnesite.....	396	981	1,365	1,970	1,795	1,854
Canada—						
Crude magnesite.....		5,040	8,442	9,362	3,767	11,248
Caustic magnesite.....		916	107	1,370		
Dead-burnt magnesite.....		1,628	4,179	2,088	4,979	4,081
India—						
Crude magnesite.....	16,198	19,273	19,436	24,461	29,620	28,676
Australia—						
Crude magnesite.....	7,104	4,043	6,372	12,850	14,721	10,583
<b>FOREIGN COUNTRIES</b>						
Austria—						
Crude magnesite (exports).....	197,717	(a)	2,213	1,607	336	290
Caustic magnesite (b).....	(a)	12,353	5,230	6,269	10,425	7,813
Dead-burnt magnesite (b).....	(a)	131,819	83,418	72,713	76,788	76,219
Czecho-Slovakia—						
Crude magnesite (b).....		2,948		4,738	7,098	12,374
Calcined magnesite (b).....		42,155		25,885	29,207	33,070
Greece—						
Crude magnesite.....	116,157	54,732	61,547	64,655	89,368	(a)
Caustic magnesite.....	(a)	10,866	19,812	20,058	28,821	(a)
Dead-burnt magnesite.....	(a)		1,534	1,124		(a)
Italy—						
Crude magnesite.....	590	8,560	12,274	13,220	14,903	19,523
Norway—						
Crude magnesite.....	645	726	2,321	1,944	1,672	703
Calcined magnesite (exports).....	(a)	245	713	458	445	198
Magnesia bricks (exports).....	(a)	189	490	516	405	304
Russia—						
Crude magnesite.....		10,397	15,181	(a)	70,110	(a)
Caustic magnesite.....					2,192	
Dead-burnt magnesite.....				14,243	19,685	50,700
Magnesia bricks.....					10,480	
Spain—						
Crude magnesite.....	943	298				
United States—						
Crude magnesite.....	8,600	49,812	131,473	107,232	107,732	119,200

\*Source—Imperial Mineral Resources publications.

(a) Data not available.

(b) Exports less imports.

## MAGNESIUM SULPHATE

**Canada.**—In 1915 work commenced on the Spotted Lake deposit of magnesium sulphate, near Kruger mountain, Osoyoos division, British Columbia. Shipments were made of this material to the drug trade during 1915 and 1916. Crude magnesium sulphate salt to a total of 2,600 tons was extracted in 1917 of which quantity 929 tons were shipped to Oroville, Washington. The following year a deposit near Clinton, Lillooet district, was also operated. Preliminary shipments were made in 1920 from several lakes, containing these salts, on the Basque ranch, near Ashcroft, British Columbia.

No activities have been reported in this industry in Canada since 1923. In that year 121 tons of refined magnesium sulphate were shipped from the Basque ranch deposit.

The importations of magnesium sulphate or epsom salts during 1926 reached a total of 2,131 tons valued at \$39,016. The average value for this period's imports was somewhat lower than that reported for 1925, when 2,137 tons at \$45,181 were brought into Canada. During 1924, imports totalled 2,238 tons invoiced at \$54,139.

Table 375.—Production of Magnesium Sulphate in Canada, 1917-1926

Year	Tons	Value
		\$
1917.....	929	4,645
1918.....	1,949	14,565
1919.....	738	9,115
1920.....	1,947	39,886
1921.....	2,029	39,506
1922.....	1,021	24,017
1923.....	121	6,580
1924-1926.....		
<b>Total.....</b>	<b>8,734</b>	<b>138,314</b>

## MINERAL WATERS

**Canada.**—A record of all the natural mineral waters produced in Canada and sold to the general public for medicinal purposes since 1888 has been compiled. In that year 124,850 imperial gallons were produced and during the following ten years production varied between 424,600 gallons and 767,460 gallons. However, from 1899 to 1920 only the value of the shipments has been recorded; the high mark for the industry was reached in 1911 when the production was valued at \$223,758. Since 1920 shipments have fallen off to a marked degree; in 1922, production was 221,433 gallons worth \$14,220. During 1925, a total of 190,134 gallons valued at \$28,413 was produced and in 1926 a slight increase was recorded when 215,356 imperial gallons with a valuation of \$29,721 were shipped from Quebec and Ontario springs and wells.

Table 376.—Production of Mineral Waters in Canada, 1888-1926

Year	Imp. gal.	Value	Year	Value	Year	Imp. gal.	Value
		\$		\$			\$
1888.....	124,850	11,456	1900.....	75,000	1913.....		173,677
1889.....	424,600	37,360	1901.....	100,000	1914.....		134,111
1890.....	561,165	66,031	1902.....	100,000	1915.....		115,274
1891.....	427,485	54,268	1903.....	100,000	1916.....		127,806
1892.....	640,380	75,348	1904.....	100,000	1917.....		145,814
1893.....	725,096	108,347	1905.....	100,000	1918.....		154,468
1894.....	767,460	110,040	1906.....	100,000	1919.....		71,015
1895.....	739,382	126,048	1907.....	136,020	1920.....		24,582
1896.....	706,372	111,736	1908.....	151,953	1921.....	328,273	21,716
1897.....	749,691	141,477	1909.....	175,173	1922.....	221,433	14,220
1898.....	555,000	100,000	1910.....	199,563	1923.....	232,451	16,455
1899.....		100,000	1911.....	223,758	1924.....	209,353	15,421
			1912.....	172,465	1925.....	190,134	28,413
					1926.....	215,356	29,721
					<b>Total.....</b>		<b>3,848,736</b>

Table 377.—Production in Canada, Imports and Exports of Mineral Waters, 1924-1926

	1924		1925		1926	
	Imp. gal.	Value	Imp. gal.	Value	Imp. gal.	Value
		\$		\$		\$
<b>PRODUCTION, by provinces—</b>						
Quebec.....	7,683	2,288	7,122	2,961	6,956	2,444
Ontario.....	201,670	13,133	183,012	25,452	208,400	27,277
<b>Total.....</b>	<b>209,353</b>	<b>15,421</b>	<b>190,134</b>	<b>28,413</b>	<b>215,356</b>	<b>29,721</b>
<b>IMPORTS—Mineral and aerated waters.....</b>		181,107		186,543		170,055
<b>EXPORTS—Mineral and aerated waters.....</b>		109,735		12,402		47,597

## NATRO-ALUNITE

**Canada.**—In the southwestern part of Kyuquot sound, which is one of the large fiords indenting the west coast of Vancouver island, the metamorphic volcanic rocks, which comprise the greater part of Vancouver island, have been peculiarly altered to rocks containing large amounts of alunite and pyrophyllite. These deposits of alunite and pyrophyllite, which are the only deposits of their kind known in Canada, were "staked" in 1908, and during the last few years the pyrophyllite rock has been quarried by the *British Columbia Pottery Company* as a "fireclay", and by the *San Juan Mining and Manufacturing Company* as a base of a powdered "household cleanser." Of later years alunite has attracted considerable attention as a possible source of "potash", as well as a source of alum. (\*)

Production from this source amounted to 30 tons of calcined alunite in 1921. Small shipments were made during 1922, 1923 and 1925, but in 1926 there was no production. The preparation of natro-alunite for the market consists in crushing, grinding and roasting; the resultant product, calcined alunite, may be used as a fertilizer because of the potash content.

Table 378.—Production of Natro-Alunite in Canada, 1921-1926

Year	Tons	Value
		\$
1921.....	30	1,500
1922.....	50	2,500
1923.....	15	750
1924.....		
1925.....	20	1,000
1926.....		
<b>Total.....</b>	<b>115</b>	<b>5,750</b>

## PHOSPHATE

\* **Canada.**—The existence of the extensive Lievre river deposits of crystalline phosphate lime or apatite was first noted in 1829. However, the first commercial shipments of this mineral in Canada were made between 1870 and 1877 from North Burgess township, Ontario to a super-phosphate plant at Brockville. An active market was open in Europe for raw phosphate for fertilizer purposes and this added impetus to the mining of phosphate in Ontario and Quebec. From 1878 to 1892 inclusive, the industry in Canada was at its highest point, and 296,695 tons were produced. Exports during this 15 year period totalled 281,329 tons of which quantity Great Britain received approximately 86 per cent; the United States, 8 per cent; Germany, 5 per cent; and France, Denmark, Spain and Holland, the remainder. The maximum shipment of 31,753 tons was made in 1890. Since 1899, however, the annual production has exceeded the 1,500 ton mark only once.

The discovery and opening up in the United States of the large phosphate deposits in Florida in the nineties and later of those in Tennessee caused a sharp falling-off in prices for phosphates and resulted in the closing of the large Canadian mines.

The production of Canadian phosphate since 1895 has been mainly obtained as a by-product in the mining of mica.

Activity in the phosphate industry in Canada has been practically negligible for a number of years. In 1926 a small shipment of phosphate rock amounting to 40 tons valued at \$800 was made from the province of Quebec. During the preceding year 16 tons of crude material worth \$189 were shipped from an old mine dump.

The Canadian demand for phosphate is supplied almost entirely by shipments of Florida phosphate, and the total imports during 1926 were recorded at 14,244 tons, appraised at \$65,607. During the previous year imports amounted to 14,002 tons valued at \$62,107.

**Quebec.**—The richest phosphate bodies discovered in the province were those in ranges XI and XII of the township of Buckingham and in the township of Portland West, west of the Lievre river. Scattered deposits of more than average richness were worked at various points in the Templeton district and towards the Gatineau river, but the total tonnage taken from these mines was not large. Although scattered mica deposits are found all through the country between and adjacent to the Lievre and Gatineau rivers for a considerable distance to the north of Ottawa, apatite as a vein mineral accompanying mica seems to become less abundant with increasing distance from the main bodies to the south, and in several of the most northerly located mica mines it is almost entirely absent.

\*Extract from report by Charles H. Clapp. Summary Report Geological Survey, 1913. P. 109.

The Lievre river deposits were first discovered in 1829, but records of the production of apatite in this district are only available since 1878. Shipments during 1886 amounted to 19,435 tons; the following year 19,589 tons were shipped by eleven mines, employing 456 men. During 1888, ten mines were operated, producing 20,396 tons and employing about 550 men; the next year reports were received from five producers employing 438 men and shipping 27,552 tons, the high record for the industry in this province. Since 1895, the annual production has never exceeded the 1,500-ton mark. Of recent years the production has consisted principally of minor tonnages obtained as a by-product in connection with the mining of mica.

**Ontario.**—Between 1870 and 1877, the first commercial shipments of phosphate were made from deposits in North Burgess township to the Brockville Chemical and Superphosphate Company's plant for the manufacture of superphosphate. In 1870, the production from the two mines in North Burgess totalled 1,200 tons; 22 men were employed during that year. Only one property was active in 1871, employing 18 men and producing 200 tons. During 1887 five deposits were operated producing 4,101 tons and employing 130 men. The high mark for the industry was reached in 1890 when 15 producers reported total shipments of 4,581 tons. Since 1892 small shipments from Ontario deposits have been made intermittently.

Table 379.—Total Production of Phosphate in Canada, by Provinces, 1870-1926.

Year	Quebec		Ontario		Canada	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
1870.....			1,200	13,600	1,200	13,600
1871.....			200	2,100	200	2,100
1872-1877†.....						
1878*.....	9,919	195,831	824	12,278	10,743	208,109
1879*.....	6,604	101,470	1,842	20,565	8,446	122,035
1880*.....	11,673	175,664	1,387	14,422	13,060	190,086
1881*.....	9,497	182,338	2,471	36,117	11,968	218,456
1882*.....	16,585	302,019	568	6,338	17,153	308,357
1883*.....	19,666	427,168	50	500	19,716	427,668
1884*.....	20,946	415,350	763	8,890	21,709	424,240
1885*.....	28,535	490,331	434	5,962	28,969	496,293
1886.....	19,435	288,603	1,060	15,735	20,495	304,338
1887.....	19,589	264,452	4,101	55,363	23,690	319,815
1888.....	20,396	219,779	2,089	22,506	22,485	242,285
1889.....	27,552	287,400	3,436	29,262	30,988	316,662
1890.....	27,172	309,980	4,581	51,065	31,753	361,045
1891.....	20,244	206,416	3,344	35,187	23,588	241,603
1892.....	10,231	134,964	1,701	22,460	11,932	157,424
1893.....	7,650	60,076	240	1,886	7,890	61,962
1894.....	6,861	41,166			6,861	41,166
1895.....	1,822	9,565			1,822	9,565
1896.....	570	3,420			570	3,420
1897.....	908	3,984			908	3,984
1898.....	632	3,160	101	505	733	3,665
1899.....	1,278	7,674	1,721	10,326	3,000	18,000
1900.....	1,270	6,090	145	1,015	1,415	7,105
1901.....	1,033	6,280			1,033	6,280
1902.....	856	4,953			856	4,953
1903.....	1,329	8,214			1,329	8,214
1904.....	817	4,590			817	4,590
1905.....	1,300	8,425			1,300	8,425
1906.....	600	4,500	250	1,875	850	6,375
1907.....	408	3,410	416	2,608	824	6,018
1908.....	598	5,900	998	8,894	1,596	14,794
1909.....	525	4,800	473	3,254	998	8,054
1910.....	1,456	12,386	22	192	1,478	12,578
1911.....	586	4,909	35	297	621	5,206
1912.....	164	1,640			164	1,640
1913.....	385	3,643			385	3,643
1914.....	554	4,875	400	2,400	954	7,275
1915.....	200	2,400	17	102	217	2,502
1916.....	190	2,340	13	174	203	2,514
1917.....	123	1,230	26	256	149	1,486
1918.....	140	1,200			140	1,200
1919.....	22	300	2	31	24	331
1920.....						
1921.....	30	450			30	450
1922.....	131	1,320	59	476	190	1,796
1923.....	30	600			30	600
1924.....						
1925.....	16	189			16	189
1926.....	40	800			40	800
<b>Total.....</b>	<b>300,569</b>	<b>4,226,255</b>	<b>34,969</b>	<b>386,641</b>	<b>335,538</b>	<b>4,612,896</b>

†No record of production.

\*Exports:—The Quebec figures include a quantity of Ontario phosphate cleared through Montreal.

Table 380.—Production in Canada, Imports and Exports of Phosphate, 1924-1926.

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION.....			16	189	40	800
IMPORTS—						
Phosphate rock.....	11,718	56,965	14,002	62,107	14,244	65,607
Acid phosphate (not medicinal).....	1,825	230,676	1,752	208,380	1,999	255,020
Phosphorus.....	55	56,455	34	36,414	44	38,135
Superphosphor tin and bronze.....	191	148,856	279	238,002	325	267,498
Superphosphate or acid phosphate of lime.....		405,937	62,426	697,277	76,919	925,515
EXPORTS Phosphate rock.....			25	500	40	800

## PYRITES

**Canada.**—Census returns for 1871 record a production of 2,800 tons of pyrites in Canada, made up of 2,300 tons from Quebec deposits and 500 tons from Ontario. However, it is only since 1886 that a continuous official record of pyrites production is available. Customs' records for the period 1881 to 1885 inclusive, show exports of 120,126 tons of pyrites to the United States. The 1886 output of pyrites was 42,906 tons, all of which was obtained from the Albert and Crown mines, Sherbrooke county, Quebec. In 1889, the production totalled 72,225 tons; shipments ranged from 27,687 tons to 158,566 tons during the following 24 years. The war years, 1914-1918, brought about an increased demand for sulphuric acid and a consequent advance in the production of pyrites. Shipments during this period reached a grand total of 1.6 millions tons or approximately 46 per cent of the total Canadian production from 1886 to 1926. Shipments of pyrites were made during 1926 by the Eustis Mining Company in Quebec, the Grasselli Chemical Company in Ontario, the Consolidated Mining and Smelting Company, and the Granby Consolidated Mining, Smelting and Power Company Limited, in British Columbia. The total production by these producers was reported at 17,845 tons worth \$63,899. The average sulphur content of the ores shipped in 1926 was 50.3 per cent.

**Quebec.**—The development of the pyrites industry in this province was due to the copper mining boom of 1859-1866. In 1863, the Capelton mines were opened up as gold prospects but as work progressed it was seen that there was available a considerable quantity of cupriferous pyrite. This property was taken over by an English concern about three years later and a plant was installed to treat the ore by the Henderson wet process. The failure to obtain satisfactory results by this process caused the closing down of the mines and they were not re-opened until 1879. From that date until their final closure in 1907 these mines were operated almost continuously. An extract from *Bancroft's, Copper Deposits of the Eastern Townships of Quebec* dealing with the development of this property from 1887 to 1907, follows:—

In 1887, while the Company was engaged in the erection of sulphuric acid works at Capelton, there was a decline in the output of the mines. It seems probable that in 1888, about 34,600 tons of ore were produced.

In 1889, the output was 36,000 tons. A small smelting plant was installed to treat the cinder from the chemical works as well as the richest of the copper ore. In 1889, also, works were constructed for the manufacture of chemical fertilizers and during the year 500 tons of Ottawa phosphates were used. The company was then employing about 300 men and treating about one-sixth of the output from the mines at its chemical works, while the remainder of the ore was shipped to various acid works in the United States.

In 1893 the No. 1 or Albert shaft had reached a depth of 2,100 feet on an incline that averaged about 30° toward the southeast; No. 3 shaft was 400 feet deep, and the No. 4 or Walter shaft was about 700 feet in depth. When one compares the data available concerning the production of the Eustis mine with the figures showing the total production of cupriferous pyrite in the province of Quebec, it is plain that after 1893, the annual output of the Capelton mines was very much reduced from what it had been in previous years. For a few months subsequent to August 17, 1893, work was suspended. In 1894, the decline in the price of copper caused the Eustis and the Capelton mines to reduce their staff by more than one-half. In Mr. Obalski's report for 1897, it is stated that about fifty men were employed underground, twenty on the surface and seventy in the chemical works. Mining operations ceased in 1907 because the supply of ore had been exhausted.

The Eustis mine was discovered about 1865, and shortly after in order to save the sulphur in the ore a small sulphuric acid works was started near St. Johns, Quebec. Owing to the lack of a market for the acid the plant was abandoned. From 1872 to 1877 between 55,000 tons

and 65,000 tons of ore were taken from the mine. In 1877, a shipment of 1,388 tons of sulphur ore was made to London, Ontario. The Eustis plant was operated almost continuously to March, 1919, and after being closed down for four years was re-opened in 1923; operations have been carried on since that date.

In Ascot township, the Moulton Hill mine was discovered in 1887 and two years later this property was opened up by a large United States company. Shipments during 1889 totalled 2,000 tons of ore containing no copper. Operations ceased on this property in 1895.

The McDonald or Weedon mine in Weedon township was first operated in 1909. During the following year, 6,112 tons of cupriferous pyrite was shipped from this mine. An idea of the importance of the mine may be gained from an examination of the shipments from the Eastern townships of Quebec during the 1910-1914 period, the total being 330,029 tons, of which quantity the Weedon contributed 174,000 tons or 53 per cent. Mining ceased on this property in 1920 and it was kept in good order until October, 1922 when the pumps were removed and the mine consequently flooded.

A deposit of pyrites was located in Stratford township in 1910 and during 1914 a shipment of 1,600 tons of pyrite carrying 45 to 48 per cent sulphur and only a trace of copper was made to Hamilton, Ontario. Further shipments were made from this property during 1915 and 1916.

**Ontario.**—Mining of pyrites commenced in Ontario during 1868 in Elizabethtown township, Leeds county. The following year 460 tons were shipped to the sulphuric acid plant at Brockville; in 1870 a further shipment of 150 tons was made. Operations on this property ceased in 1879.

The Bannockburn mine was opened up in 1898 and some shipments of iron ore were made to Hamilton, however, this ore, upon deeper working, proved to be the gossan capping of an iron pyrites deposit. These workings were abandoned in 1906; shipments during the six years of operation approximated 580 tons per month.

A small shipment of ore, running 40 per cent sulphur was made from the Sloan prospect in Elizabethtown township, near the old Billings mine.

The McIlwraith mine in Darling township was first opened up as a gold prospect but in September 1899 it was optioned by the Nichols Chemical Company and about 120 tons of ore were shipped. Upon the expiration of the option in April, 1900, all work ceased.

An account of the Hungerford mine is quoted from a report in 1907 by E. L. Fraleck of the Ontario Department of Mines:

The Hungerford mine (situated on Lot 23 in the twelfth concession of the township of Hungerford, Hastings county, was opened up 30 years ago as a gold property and a smelter was erected to extract gold from the barren pyrite."

The present operators, the American Madoc Mining Company (now Nichols Chemical Company) re-opened the mine in June 1903. Owing to some difficulty about the title, the mine was closed down in August, 1904, but operations were resumed in August 1905, and have since been continuous.

Prior to the erection of the acid plant at Sulphide in 1907, the ore from this property was shipped to Buffalo. In April, 1924, the mine was closed.

The Queensboro mine (Blakely) in Madoc township, Hastings county, shipped 65 carloads of 47 per cent sulphur ore prior to 1906. Operations ceased on this property in 1908.

Development work was commenced in 1906 on the Harris mine, located on the shore of James lake and some shipments of 42 per cent sulphur ore were made to Buffalo.

The Canadian Sulphur ore mine was discovered in 1906 and operations were carried on until 1921. P. E. Hopkins of the Ontario Bureau of Mines in 1916 gave the following information regarding this property:

The Canadian Sulphur Ore Company's Pyrites mine was discovered in 1906 by Stephen Wellington while prospecting for iron. Under the gossan, merchantable iron pyrites was discovered, from which a car load of iron pyrites was shipped in 1908. Later, the Canadian Pyrites Syndicate bought the property, installed a small plant and shipped a few hundred tons of pyrite. In the spring of 1910 the property was handed over to the present company, which began shipping ore 3 months later, and has continued to the present. The mine is equipped to produce 100 tons of iron pyrites per day, yielding 40 per cent of sulphur. Since December 11, 1912, the mine has been run by electricity supplied by the Seymour Power Company.

A branch line  $2\frac{1}{2}$  miles in length from the Bay of Quinte Railway near Queensboro to the mine was completed in 1913. The ore is shipped to the Nichols Chemical Company's acid plant at Sulphide, 11 miles southeast, and to the chemical companies at Hamilton and Detroit.

The ore is high grade, very little cobbling if any, having to be done. Ores have been shipped running 40 to 48 per cent sulphur.

The deposits are free from impurities such as arsenic, zinc, lead, copper and calcium. The pyrite burns satisfactorily, and is in good demand by sulphuric acid makers."

Work was commenced on the Caldwell mine in Blithfield township in 1916 and approximately 80 tons of ore were shipped during that year. Shipments have been made annually from this mine since 1919, although during the past six years the tonnages were obtained from stock.

The Helen iron mine, located about 15 miles northeast of Michipicoten harbour, has in the past produced large quantities of pyrites. The existence of pyrites in large quantity was only revealed by the underground work in 1904 and 1905. In 1910 this mine was the largest producer of pyrite in Ontario. Shipments continued until 1921 when the mine was closed down.

In 1910 the Vermilion (Northpines) pyrites mine on Lake Minnetakie was taken over by the General Chemical Company; no shipments were made during that year although considerable development work was done. During 1913 pyrites was exported to Buffalo, Chicago and Cleveland. Mining operations were continuous until 1921 but the following year there was no production. Tonnages were drawn from stock and shipped in 1923 and 1924 but since that date only maintenance work has been done.

**British Columbia.**—Shipments of pyrites from the Sullivan mine at Kimberley to the sulphuric acid plant at Trail commenced in 1916 and have since been continuous. In 1917, the Hidden creek mine at Anyox shipped pyrites for the first time to the sulphuric acid plant at Barnet. With the exception of 1925, tonnages of pyrites have been shipped annually from Anyox.

**Table 381.—Production of Pyrites in Canada, 1886-1926**

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	42,906	193,077	1901.....	35,261	130,544	1916.....	309,251	1,084,095
1887.....	38,043	171,194	1902.....	35,616	138,939	1917.....	416,649	1,610,762
1888.....	63,479	285,656	1903.....	33,982	127,713	1918.....	411,616	1,705,219
1889.....	72,225	307,292	1904.....	37,180	134,033	1919.....	176,487	522,704
1890.....	49,227	123,067	1905.....	33,339	125,486	1920.....	174,744	719,110
1891.....	67,731	203,193	1906.....	42,743	169,990	1921.....	33,368	116,326
1892.....	59,770	179,310	1907.....	46,243	212,491	1922.....	18,143	74,303
1893.....	58,542	175,626	1908.....	47,336	224,824	1923.....	28,591	113,020
1894.....	40,527	121,581	1909.....	64,644	222,814	1924.....	23,552	95,620
1895.....	34,198	102,594	1910.....	53,870	187,062	1925.....	15,605	58,899
1896.....	33,715	101,155	1911.....	82,666	365,820	1926.....	17,845	63,899
1897.....	38,910	116,730	1912.....	81,526	314,081			
1898.....	32,218	128,872	1913.....	158,566	521,181			
1899.....	27,687	110,748	1914.....	228,314	744,508			
1900.....	40,031	155,164	1915.....	286,038	985,190			
						<b>Total.....</b>	<b>3,592,384</b>	<b>13,243,892</b>

**Table 382.—Production in Canada, Imports and Exports of Pyrites, 1924-1926**

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Quebec.....	4,032	10,619	12,250	36,750	14,100	42,117
Ontario.....	11,429	44,542	685	8,799	371	4,912
British Columbia.....	8,091	40,459	2,670	13,350	3,374	16,870
<b>Total.....</b>	<b>23,552</b>	<b>95,620</b>	<b>15,605</b>	<b>58,899</b>	<b>17,845</b>	<b>63,899</b>
Sulphur content.....	9,742		7,587		8,975	
<b>IMPORTS—</b>						
Brimstone or sulphur, crude or in roll or flour.....	131,546	1,776,978	146,609	1,982,788	185,625	2,945,651
<b>EXPORTS—</b>						
Sulphur contained in pyrites.....	219	1,081	13	150		

## SULPHURIC ACID

**Canada.**—Statistics collected from 8 establishments manufacturing sulphuric acid in Canada during 1926 gave the production of the commodity in terms of the standard grades of 50° Bé, 60° Bé and 66° Bé. For comparative purposes it has been deemed advisable to reduce the first two grades to their equivalent in 66° Bé acid.

Importations of sulphuric acid into Canada during 1926 were comparatively negligible; exports at 28,136 tons were considerably higher than in the preceding year.

Table 383.—Production, Imports and Exports of Sulphuric Acid, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Sulphur used.....	16,665	295,101	26,202	359,519	22,844	417,479
Pyrites used.....	19,706	91,202	15,114	76,487	15,986	82,708
Acid made*.....	71,759	1,283,094	83,396	1,363,618	108,230	1,306,254
IMPORTS of acid.....	47	7,609	52	7,821	53	9,245
EXPORTS of acid.....	7,678	132,139	19,180	250,096	28,136	320,324

\*Expressed in terms of 66° Bé acid. Includes also the production of the Mond Nickel Co. Ltd. at Coniston, Ont., who now produce sulphuric acid from waste smelter gases.

## SILICA BRICK

**Canada.**—Silica brick is produced in Canada at Sydney, Nova Scotia, and Sault Ste. Marie Ontario. The Nova Scotia raw material is obtained from a quarry located at Leitches Creek in Cape Breton County.

In Ontario the quartz is extracted from a quarry in Deroche township, and is used in the production of refractory brick for the lining of iron blast furnaces.

During 1926, the total Canadian production amounted to 2,665 thousand with a valuation of \$130,702. The imports of silica brick during the same period were valued at \$263,293.

## SODIUM CARBONATE

**Canada.**—The commercial deposits of natural sodium carbonate now being worked in Canada occur on the line of the Pacific Great Eastern Railway in the Clinton mining district of British Columbia, in the vicinity of 70 Mile House. Small annual shipments have been recorded from the British Columbia deposits since 1921; the maximum production, 1,120 tons valued at \$8,140, being shipped in 1925. During 1926, shipments amounted to 595 tons valued at \$5,370.

Sodium carbonate is used largely in chemical and hydro-metallurgical plants. Its principal uses are, in the manufacture of glass, soap and paper; the bleaching and washing of linen, cotton, wool, etc.; and the dyeing and printing of fabrics. Sodium carbonate has been utilized for some time as a means of removing, and of preventing the formation of boiler scale.

Soda ash from salt brine is made in Canada on a very large scale by Brunner-Mond Company, Limited, at Amherstburg, Ontario.

Table 384.—Production of Sodium Carbonate in Canada, 1921-1926

Year	Tons	Value
		\$
1921.....	197	14,775
1922.....	202	3,027
1923.....	265	3,975
1924.....	510	5,173
1925.....	1,120	8,140
1926.....	595	5,370
Total.....	2,889	40,460

SODIUM SULPHATE

Canada.—Sodium sulphate is produced in Canada from natural deposits in Saskatchewan. Shipments from this source commenced in 1920 and 811 tons were produced during that year. There has been an annual production from these deposits since that date; in 1925 the total was 3,876 tons and in 1926 shipments amounted to 6,775 tons.

Importations of salt cake during 1926 were recorded at 41,945 tons worth \$644,696; glauber's salt to a total of 733 tons at \$10,069 and bisulphate of soda or nitre cake amounting to 15,948 tons at \$53,536 were also imported into Canada.

Table 385.—Production of Sodium Sulphate in Canada, 1920-1926

Year	Tons	Value	Year	Tons	Value
		\$			\$
1920.....	811	19,496	1924.....	1,083	6,004
1921.....	623	18,850	1925.....	3,876	19,380
1922.....	504	11,980	1926.....	6,775	13,550
1923.....	733	10,189	Total.....	14,405	99,449

Table 386.—Production in Canada and Imports of Sodium Sulphate, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
PRODUCTION—						
Natural Sodium Sulphate—						
Crude.....	965	4,825	3,876	19,380	6,775	13,550
Refined.....	118	1,179				
Artificial Sodium Sulphate—						
Sodium sulphate.....	1,648	32,948	2,248	31,529	2,237	31,417
Glauber's salt.....	1,458	36,602	1,442	33,559	1,878	39,784
IMPORTS—						
Soda, bisulphate of, or nitre cake.....	18,859	87,961	21,873	72,939	15,948	53,536
Soda, sulphate of, crude, known as salt cake.....	36,022	673,322	34,215	471,931	41,945	644,696
Glauber's salt.....	906	14,684	518	8,177	733	10,069

## CHAPTER NINE

THE COAL MINING, COKE, NATURAL GAS, PEAT AND PETROLEUM INDUSTRIES  
(Fuels) IN CANADA

Introduction.....	.....
The Coal Mining Industry in Canada.....	.....
1. General Review.....	.....
2. Commodity Statistics on Coal—including Tables on Output, Disposition, Shipments, Tonnage Lost, Imports into Canada and Exports, Consumption, and World Output.....	.....
The Coke Industry in Canada.....	.....
The Peat Industry in Canada.....	.....
The Petroleum Industry in Canada.....	.....
1. Production of Crude Petroleum.....	.....
2. Petroleum Refining.....	.....

Introduction.—In order to correlate data regarding fuels in Canada, this chapter has been prepared to include statistics of the coal, natural gas, peat and petroleum industries. This survey presents information in detail regarding these industries as a whole, dealing principally with the mineral industry although supplementary data are shown for closely allied manufacturing operations.

Primarily the topic of fuel supply is ever present in the Canadian public mind, and for two main causes, namely: occasional limitation of supplies from other countries, and a growing national appreciation of the value and extent of Canada's own coal resources. Repeated shortages of coal supplies caused a widespread popular demand for the adoption of measures to prevent the recurrence of such situations. Steps were taken to promote the by-product coking of Canadian coal to meet the need for domestic fuel; investigations were undertaken looking to the preparation of western lignites in such form as would permit their shipment for considerable distances; oil-burning equipment suitable for household heating made its appearance on the Canadian market; and, as a result of the educational program regarding household fuels, there arose a demand for a more extensive use of Canadian coals by railways and industrial concerns.

## THE COAL MINING INDUSTRY

## 1. General Review

## CANADA

An historical survey of coal mining in Canada is best made by tracing the growth of this industry through its various stages in each province. In the following provincial reviews, will be found a resumé of the early events in the coal trade of Canada drawn from the official records of the federal, and the several provincial departments of mines.

Official data on the production of coal in Canada show that 16,426,253 tons of coal were produced during the period 1785-1880.

During 1881, the coal production was 1.5 million tons; twenty years later it had risen to 6.48 million tons; and in 1913, a total of 15 million tons was produced. The record annual output for the industry was made in 1923, when 16.99 million tons were raised.

In 1926 there were 457 coal mines operated in Canada, comprising 316 in Alberta, 53 in Saskatchewan, 43 in Nova Scotia, 33 in British Columbia, 11 in New Brunswick and 1 in the Yukon. Capital employed by these mines amounted to \$148,278,315, of which 56 million dollars was invested in Alberta mines, 54.3 million dollars in Nova Scotia mines, 32 million dollars in British Columbia properties, 3.9 million dollars in Saskatchewan enterprises, and the balance in New Brunswick and the Yukon.

Employment in the coal-mining industry was constant in 1926; the only fluctuation was due to the usual seasonal variation in demand. Following the prolonged strike in Nova Scotia in 1925, the mines in that province worked steadily throughout 1926. Time lost in the eastern mines due to strikes amounted to 26,030 working days as compared with a total loss of 1,478,727 working days in 1925. In Alberta there were 3 disputes in which 445 men were involved with a loss of 4,105 working days. In all there were 16 strikes in which 8,895 men participated, losing in the aggregate 30,135 working days. The 1925 total was considerably higher and consisted of 13 strikes, affecting 15,544 men with a consequent loss of 1,571,859 working days. In 1924 there were 15 disputes, 21,214 men were affected and the total loss in working time amounted to 1,555,105 days. During 1923, there were 25 disputes, 20,986 men were affected and the total loss in working time amounted to only 308,430 days.

The average number of employees on Canadian coal mine staffs in 1926 increased to 28,368 as compared with an average of 25,032 for the preceding year. Salaries and wages showed an advance of 2.6 millions to \$35,841,796 as compared with \$33,200,309 in 1925. The fluctuations in coal-mine employment corresponded with the seasonal demand for coal. In January 28,890 wage-earners were employed; the number decreased to 24,220 in March and remained fairly constant until September when 27,355 men were engaged in or about the mines. The increase was gradual during the remaining months and the year closed with a peak employment in December of 31,251 men.

Closely related in point of interest to the number of employees, are the data concerning the number of days' work done and the wages paid. In 1926, excluding the salaried employees, there were 26,878 men working in the coal mines of Canada; of these 6,268 worked on the surface and 20,610 underground. Surface men worked on the average of 271 days during the year; underground men 235 days. The total number of man-days' work done during the year was 6,556,027; this number divided into the total sum of wages paid during the year, showed an average earning power per man of \$4.97 per working day. In 1925 the average computed on the same basis was \$5.51 per day and in 1924 it was \$5.62 per day.

Canada's coal output in 1926 advanced to 16,478,131 tons valued at \$59,875,094, an increase of 3,343,163 tons in quantity and \$10,613,143 in value over the totals of 13,134,968 tons with a valuation of \$49,261,951 for the preceding year.

Nova Scotia mines produced 6,747,477 tons of coal in 1926 which was a greater tonnage from these mines than in any previous year since 1916 when the output amounted to 6,912,140 tons. These figures furnish a marked contrast to the output of 3,842,978 tons in 1925 but in that year a strike extending over about four months very materially reduced the output.

New Brunswick's coal mines produced 173,111 tons in the year marking a slight recession from the 208,012 tons produced in 1925.

Bituminous coal only is produced in Nova Scotia and New Brunswick. Employment in the coal mines of the maritime provinces was comparatively steady throughout the year, with a slightly upward trend.

In the western field, the province of Alberta is the greatest producer and in 1926 the mines of this province yielded 6,503,705 tons of coal including 3.15 million tons of lignite, 2.86 million tons of bituminous coal and 0.49 million tons of sub-bituminous.

Saskatchewan produced 439,803 tons of lignite. In the prairie provinces there is a seasonal decline in the production of coal during the summer months when many of the small mines are hut down so that their owners may engage in the more profitable industry of growing wheat.

British Columbia, mining bituminous coal only, produced about a quarter of a million tons per month, and in 1926 showed an output of 2,613,719 tons. A large part of British Columbia's coal output goes to export trade, and the balance is used within the province, very considerable quantities being consumed in the metallurgical works and other industrial enterprises.

Canada drew its supply of imported coal in 1926 largely from the United States but also imported 364,036 tons from other countries, including 276,113 tons from Great Britain and the balance, in almost equal amounts, from Germany and the Netherlands, together with a small quantity from Japan. The figures for the imports of coal mined in countries other than the United States may even be slightly higher than those quoted because during the year some

European coal imported to United States points, and there warehoused for distribution, eventually found its way into Canada, but in a case like this the Customs' records only show the country of immediate origin so that coal thus imported would be credited to the United States.

Development of the coal trade between Canada and Great Britain had its inception during the strike at the anthracite mines in the United States, but the long drawn out strike in British coal mines in 1926 was a retarding factor in this newly developed trade. During the five years 1922-1926, Canada has imported from Great Britain a total of 2.54 million tons of coal, including 1.54 million tons of anthracite and 1 million tons of bituminous coal.

A new feature of Canada's import trade in coal was the receipt of shipments from Germany and the Netherlands. This was nearly all classed as anthracite although it included some briquetted coal.

Exports of Canadian coal were about equally divided between the eastern and western coal fields. In all 1,028,200 tons were shipped to points outside the Dominion. Canada's chief customers are Newfoundland and the United Kingdom, Alaska, points in the United States, the Philippines, and Australia. Smaller quantities are exported each year to a great many other places.

Interest in the production of by-product coke as a domestic fuel has been cultivated in Canada as a part of the educational program inaugurated when a shortage of imported coal supplies became acute. Much more coke has been used for domestic heating during the past year than previously, and as the people became accustomed to burning this fuel, many developed a preference for it.

#### NOVA SCOTIA

In 1654, a concession was granted by Louis XIV to Nicholas Denys to mine gold, silver, copper and other minerals on the whole of Cape Breton island. A prospectus was published in Paris by Denys during 1672, in which it was stated that coal was to be found throughout the concession near the sea coast. The Intendant of New France, M. Duchesneau, issued a proclamation in 1677, placing a royalty of 20 sous per ton on all coal mined in Cape Breton. Further reference is made to the Cape Breton coal deposits in Admiral Walker's journal in which he states that in 1711 a supply of coal was obtained from the cliffs with the aid of crowbars. But, it was not until 1720 that mining methods were employed in the extraction of coal in this district. In that year it became necessary to obtain fuel for the use of the men engaged in the construction of the fortress of Louisburg. During the succeeding 100 years, little work was done in connection with the mining of coal. In 1724, coal was exported to Boston and in 1728 some shipments were made to Martinique.

Cape Breton became part of Nova Scotia in 1820, and at that time considerable tonnages of coal were being mined. The General Mining Association took over all the mineral rights in the province in 1827. Active mining operations were carried on by this concern in Cape Breton, and in Pictou and Cumberland counties. In 1858 all mineral rights in Nova Scotia were handed over by this Association to the local government, in return the association was permitted to retain the deposits on which work had been commenced. The royalty on slack coal was abolished; a reduction in royalty to 4.80 pence per ton was made on all screened coal sold up to 250,000 tons and to 3.20 pence per ton on sales over this quantity.

Exports to the New England states were very extensive during the period 1854 to 1867, due in the main part to the fact that the United States government had removed the duty on coal in the former year. From 1867 to 1872 a duty of \$1.25 per ton was in force; a reduction to 75 cents per ton was made then and this latter rate continued for 22 years. The period from 1894 to 1897 saw a further reduction in duty to 40 cents a ton which was then increased to 67 cents. Increasing quantities of Nova Scotia coal were shipped to the New England states until in 1903 exports totalled 968,832 tons.

The Dominion Coal Company was incorporated in 1893, taking over the leases of land and sea areas on the south side of Sydney harbour. In 1900 the General Mining Association's mineral rights were taken over by the Nova Scotia Steel and Coal Company.

From 1785 to 1873 inclusive, Nova Scotia produced 8,053,670 tons; in 1874, the production was 972,954 tons; twenty years later it had risen to 2,527,982 tons. The maximum production for the province was reached in 1913 when 7,980,073 tons were shipped; employment was furnished during that year to 13,664 men. In 1926, the total output was recorded at 6,747,477 tons, wage-earners numbered 12,100, including 2,222 surface workers and 9,878 underground.

### NEW BRUNSWICK

The discovery of coal in New Brunswick dates back to 1782. Since 1825 the deposit at the head of the Grand Lake, Queens county, has been worked to a limited extent. During 1869, 1870 and 1871, an average production of 22,050 tons was recorded, with a mine value of \$26,600; twelve men were employed during these three years. The high mark for the industry in this province was reached in 1922 when production totalled 287,513 tons and wage-earners numbered 611 with an average daily wage of \$3.78. Output in 1926 dropped to about the same level as in 1920 and amounted to 173,111 tons. Wage-earners on the mine pay-rolls averaged 544, earnings averaging \$3.18 per day.

### SASKATCHEWAN

The first reference to the occurrence of coal in Saskatchewan is contained in the report of the Palliser expedition in 1857. Investigations were made in the Souris valley by these men on the strength of stories told by Indians and half-breeds. Dr. G. M. Dawson referred to these deposits in 1875; five years later Selwyn conducted boring operations between the Souris valley, Saskatchewan, and Turtle Mountain, Manitoba. D. B. Dowling reported on the Souris valley geology in 1903.

Coal for local consumption is reported to have been mined in the Willow Bunch district about 1872. Shipments on a commercial basis were commenced in 1880 when coal was conveyed by barge to Winnipeg. Production in 1892 totalled 5,400 tons; twelve years later, the output had risen to 124,885 tons; and in 1924 the maximum production of 479,118 tons for the province was reached.

### ALBERTA

"The earliest intimation of the occurrence of coal in the area under discussion is probably that which is to be found on a map furnished by Arrowsmith, for Mackenzie's voyages through North America, published in 1801; and a later edition by Arrowsmith published in 1811, on which is shown Peter Fidler's route across the plains, in 1793. These both show that coal had been observed on the Red Deer river, somewhere near the mouth of the Rosebud.

"David Thompson, one of the early pioneers, in 1800 made a trip from the Rocky Mountain House down the Saskatchewan, and noted the coal seams; but his journal is still unpublished. Alexander Henry, trading for the North West Company, records coal at Rocky Mountain House, and mentions seeing in 1811, during his journey down the river, the thick seam near Goose encampment which he estimates at about 30 feet in thickness.

"The coal at Edmonton was noted by Sir George Simpson, in 1841; and ten years later, Sir John Richardson obtained specimens, and considered them to be of the same horizon as the coal on the Mackenzie river.

"Father De Smet crossed the mountains from the westward in 1845, passing Rocky Mountain House. In the foothills, or in the vicinity of the mountains, coal was seen on some of the streams—probably branches of the Red Deer river.

"In 1857, Sir James Hector found coal on Souris river near the present mines. In 1858, he described the coal at Edmonton and also that on the Red Deer river south of Edmonton; remarking that the coal at Edmonton was in use in the forges, and had proved satisfactory. In 1860, he saw the coal seams on the Athabaska and on the Pembina near where the Grand Trunk Pacific railway crosses that stream.

"In 1863, Lord Milton and Dr. Cheadle, recorded the use of coal in the forges at Edmonton, from the seams in the river bank, and also mentioned seeing thick coal seams on the Pembina.

"Dr. Grant in '*Ocean to Ocean*'—the record of Sir Sandford Fleming's trip across the continent in 1872—also refers to the Edmonton and Pembina coals, and to the reported occurrence of vast beds of coal on the Brazeau.

"Discoveries of coal near the International Boundary were made during the progress of the survey of this line. Attached to the commission as a naturalist, was Dr. G. M. Dawson, who reported very fully on the geology of the country, and paid special attention to the evidences of coal underlying the plains. The coal at Roche Percee, discovered in 1857, was fully reported upon, and analyses made. In the vicinity of Milk river, small coal seams were noted for the first time.

"Coal was probably mined at Coal Banks, Belly river, before the advent of the mounted police in 1874. It was then teamed to the barracks at Macleod.

"The coal seams at Blackfoot crossing were recorded by Prof. John Macoun in the report of the Canadian Pacific Railway survey for 1879."<sup>1</sup>

<sup>1</sup> Coal Fields of Alberta, by D. B. Dowling, Geological Survey, Canada, No. 44 Geological Series.

Mining was commenced near Medicine Hat in 1883. Two years later the Bow river mine near Cochrane was operated. About 1886, mining on a commercial scale was started at Lethbridge; prior to this date small quantities of coal were obtained from the banks of the river. Coal was discovered near Banff, on the Cascade river, opposite the Bankhead mine in 1888, but, operations ceased here upon the discovery of coal near the railway at Anthracite. The establishment of coal mining at Canmore dates back to 1888.

The first recorded production for this province was for the year 1886, when 43,220 tons were produced. Ten years later, production amounted to 209,162 tons; in 1906, the output had increased to 1,246,360 tons; and in 1920, the high record for the province of 6,907,765 tons was reached. Wage-earners engaged in the coal mining industry during 1920 were recorded at 9,640 while in 1926, there were 8,667 men employed and the total output was 6,503,705 tons.

### BRITISH COLUMBIA

The discovery of coal in British Columbia dates back to 1835. In that year, samples of coal were brought by the Indians to the Fort McLoughlan post of the Hudson's Bay Company. This coal was found on the northern end of Vancouver island. The next year, the *Beaver*, the first steamboat on the Pacific coast, was supplied with British Columbia coal. Small quantities of coal were extracted from the northern Vancouver deposit during the succeeding years. In 1852 coal was discovered in the Nanaimo area and in the following year over 2,000 tons were produced.

Outcrops of coal were first observed in the Crowsnest Pass coal field in 1858. Local government officials at Fort Steele were advised in 1874 of the occurrence of coal in the Crowsnest pass, but this news created little interest. An excerpt from a report by Robert Strachan, very clearly sets forth the further developments in this district, as follows:

"It was not until 1887 that Mr. William Fernie and Lieut.-Col. Baker commenced to systematically prospect and explore the district. They continued their work for eight years, and during that time were fortunate in interesting others to finance them. They then secured a charter to build a railway, which was accompanied by a grant of certain lands along the side of the railway, and included the rights to the coal.

"The charter required them to build a railway from some point at or about the junction of Summit and Michel creeks to a point on the lower Kootenay river where it joined Goat river. This railway, known as the British Columbia Southern railway, forms the nucleus of the present Crowsnest Pass branch of the Canadian Pacific railway, and the land which accompanied the charter, with certain modifications, constitutes the holdings of the present Crow's Nest Pass Coal Company comprising about 200,000 acres.

"The Crow's Nest Pass Coal Company became actively interested in this field by acquiring a majority interest in the Fernie-Baker syndicate in the year 1897, and since that time they have played a leading part in the development of the coal industry in eastern British Columbia. Realizing that a railway, as laid down in the charter, provided only one outlet for coal, namely, over the Kootenay river to the Boundary district, the Company at once made an arrangement with the Canadian Pacific Railway Company to extend their branch line, then terminating at Fort McLeod, in Alberta, to the Kootenay river, or to the Kootenay Landing on Kootenay lake as it is now termed, in order to enable them to open coal mines at Coal Creek and to build coke ovens at Fernie. The result was that in the following year, when the railway reached Fernie and a branch line extended to the mines, production immediately commenced.

"During that year, 10,000 tons of coal were shipped, and also 361 tons of coke from the coke ovens, which were of the bee-hive type. The following year, coal production had increased to 102,000 tons and over 29,000 tons of coke were made. Since that time the Crow's Nest Pass Coal Company has been a continuous producer of coal and coke, and until 1908 they had the field to themselves.

"In that year, two other companies started operations. The Canadian Pacific Railway, who under their arrangement to build the railway, had acquired a block of six square miles, opened a mine at Hosmer, eight miles north of Fernie; and the Corbin Coal and Coke Company commenced operations on an outlying portion of the field, about twenty-four miles east of Fernie. The importance of the district in connection with the development of the interior of the Province will be realized when it is stated that, since the commencement of operations in 1898, over nineteen million tons of coal, or 27 per cent of the total production of the province, has come from this district."

Dawson's report in 1879 referred to the occurrence of coal in the Nicola and Similkameen valleys; nevertheless commercial mining operations did not commence in the former district until 1906 and in the latter until 1910.

From 1836 to 1852, the British Columbia production of coal totalled 11,200 tons; increases were recorded annually until in 1860, an output of 15,957 tons was reached. In 1871, the number of men employed in the coal mines in this province was 194; the value of plant and machinery was \$94,000; and the production amounted to 50,400 tons. Five years later the output had risen to 157,007 tons and in 1901 a total of 1,919,488 tons was produced. The maximum production for the province of 3,330,745 tons was attained in 1910, when 7,758 men were employed of whom 5,903 worked underground. During 1926 employment was furnished 5,095 wage-earners including 1,660 on surface and 3,435 underground; the total output was 2,613,719 tons.

The question of fuel oil competition to British Columbia coal is of such importance that an extract dealing with this point is quoted from the report of the British Columbia Bureau of Mines:—

"The importation and use of fuel oil continues to be the greatest competitor of the coal produced in British Columbia.

"In 1924 there were 98,351,974 gallons of fuel oil imported into British Columbia; in 1925 the importations rose to 108,836,183 gallons, while in 1926 the quantity imported was 106,160,145 gallons. This amount of fuel-oil displaces the use of approximately 750,000 tons of coal a year.

"The most hopeful sign from the coal-mining view is that the consumption of fuel oil on the Pacific coast is now in excess of the production, with the result that the price has very considerably increased.

"A large section of the Great Northern Railway has changed over from the use of fuel oil in its locomotives to coal; much of this coal will be supplied from the Crow's Nest Pass district."

Table 387.—Principal Statistics in the Coal Mining Industry in Canada, 1922-1926

Year	Number of firms	Number of mines	Capital employed	Number of employees	Salaries and wages	Fuel and electricity	Selling value of products
			\$		\$	\$	\$
1922.....	452	506	140,466,108	31,838	39,550,627	(a) 3,183,642	65,518,497
1923.....	459	507	143,447,448	32,046	46,215,712	4,756,308	72,058,986
1924.....	451	520	146,711,531	27,183	35,123,490	4,358,987	53,593,988
1925.....	450	511	145,006,440	25,032	33,200,309	4,069,634	49,261,951
1926.....	433	457	148,278,315	28,368	35,841,796	4,631,691	59,875,094

(a) Fuel only.

Table 388.—Output, Exports, Interprovincial Shipments, Imports and Coal made Available for Consumption in Canada, by Provinces, 1926

(Short tons)

Province	Canadian coal				Imported from U.S.A.	Imported from Great Britain	Imported from Germany except as noted	Coal available for consumption
	Output	Received from other provinces	Shipped to other provinces	Exported				
<b>PRINCE EDWARD ISLAND—</b>								
Anthracite.....					5,344			5,344
Bituminous.....		87,230			1,622			88,852
Total.....		87,230			6,966			94,196
<b>NOVA SCOTIA—</b>								
Anthracite.....					39,194	11,523	2,240	52,957
Bituminous.....	6,747,477		2,536,796	559,546	23,921		(a) 100	3,675,156
Total.....	6,747,477		2,536,796	559,546	63,115	11,523	2,340	3,728,113
<b>NEW BRUNSWICK—</b>								
Anthracite.....					61,704	35,197		96,901
Bituminous.....	173,111	483,995	2,754	24,929	97,548	110		727,081
Total.....	173,111	483,995	2,754	24,929	159,252	35,307		823,982
<b>QUEBEC—</b>								
Anthracite.....					1,253,246	207,869	(b) 83,475	1,544,590
Bituminous.....		1,968,325		675	1,793,990	3,065		3,764,705
Lignite.....		221						221
Total.....		1,968,546		675	3,047,236	210,934	(b) 83,475	5,309,516
<b>CENTRAL ONTARIO—</b>								
Anthracite.....					2,444,280	12,589	(c) 1,805	2,458,674
Bituminous.....				600	10,531,095			10,530,495
Sub-bituminous.....		*4,725						*4,725
Lignite.....		*72,564						*72,564
Total.....		77,289		600	12,975,375	12,589	(c) 1,805	13,066,458
<b>MANITOBA AND HEAD OF LAKES—</b>								
Anthracite.....					78,800			78,800
Bituminous.....		69,348		4,652	1,314,387			1,379,083
Sub-bituminous.....		68,409						68,409
Lignite.....		663,298						663,298
Total.....		801,055		4,652	1,393,187			2,189,590
<b>SASKATCHEWAN—</b>								
Anthracite.....					464			464
Bituminous.....		110,253		6,096	1,887			106,044
Sub-bituminous.....		54,515						54,515
Lignite.....	439,803	1,174,610	204,728					1,409,685
Total.....	439,803	1,339,378	204,728	6,096	2,351			1,570,708
<b>ALBERTA—</b>								
Bituminous.....	2,858,456	28,145	164,168	631	1,515			2,723,317
Sub-bituminous.....	489,736		149,486					340,250
Lignite.....	3,155,513		1,778,014					1,377,499
Total.....	6,503,705	28,145	2,091,668	631	1,515			4,441,066
<b>BRITISH COLUMBIA—</b>								
Anthracite.....					210	4,992		5,202
Bituminous.....	2,613,719	34,920	78,498	431,071	31,960	729	(d) 303	2,172,062
Sub-bituminous.....		21,837						21,837
Lignite.....		72,049			10,926	39		83,014
Total.....	2,613,719	128,806	78,498	431,071	43,096	5,760	(d) 303	2,282,115
<b>YUKON—</b>								
Bituminous.....	316				10			326
Total.....	316				10			326
<b>CANADA—</b>								
Anthracite.....					3,883,242	272,170	87,520	4,242,932
Bituminous.....	12,393,079	2,782,216	2,782,216	1,028,200	13,797,935	3,904	403	25,167,121
Sub-bituminous.....	489,736	149,486	149,486					489,736
Lignite.....	3,595,316	1,982,742	1,982,742		10,926	39		3,606,281
Total.....	16,478,131	4,914,444	4,914,444	1,028,200	17,692,103	276,113	(e) 87,923	33,506,070

(a) Imported from the Netherlands. (b) Includes 37,755 tons imported from the Netherlands. (c) Includes 47 tons imported from the Netherlands. (d) Imported from Japan. (e) Includes 37,902 tons imported from the Netherlands, also 303 tons from Japan. \*Includes all coal shipped to any point in Ontario from western mines.

Table 389.—Capital Employed in the Coal Mines of Canada, by Provinces, 1925 and 1926

Province	1925				1926			
	Capital employed as represented by				Capital employed as represented by			
	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash trading and operating accounts and bills receivable	Total	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	47,691,027	2,660,857	3,797,594	54,149,478	45,313,364	2,850,987	6,148,651	54,313,002
New Brunswick...	1,229,267	33,348	459,961	1,722,576	1,357,866	24,623	305,620	1,688,109
Saskatchewan.....	2,543,226	53,990	224,621	2,826,837	3,630,888	57,918	220,708	3,9,9,514
Alberta.....	44,946,996	1,101,274	7,069,303	53,117,573	47,302,986	1,049,581	7,724,990	56,077,557
British Columbia..	30,474,850	768,744	1,743,582	32,987,176	29,138,472	802,609	2,146,252	32,087,333
Yukon.....	202,500	300		202,800	202,500	300		202,800
Canada.....	127,037,866	4,623,513	13,295,061	145,006,440	126,946,076	4,786,018	16,546,221	148,278,315

Table 390.—Employees, Salaries and Wages in the Coal Mines in Canada, by Provinces, 1926

Province	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Surface	Under-ground				
						\$	\$	\$
Nova Scotia.....	485	37	2,222	9,878	12,622	1,003,717	14,041,702	15,045,419
New Brunswick.....	27	2	129	415	573	62,573	432,006	494,579
Saskatchewan.....	42	3	107	363	515	77,435	455,256	532,691
Alberta.....	619	38	2,149	6,518	9,324	1,525,006	11,129,594	12,654,600
British Columbia.....	217	20	1,660	3,435	5,332	569,789	6,544,118	7,113,907
Yukon.....			1	1	2		600	600
Canada.....	1,390	100	6,268	20,610	28,368	3,238,520	32,603,276	35,841,796

Table 391.—Number of Wage-Earners Employed in the Coal Mines of Canada by Months and by Provinces, 1925 and 1926

Month and year	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
January.....1925	12,233	642	755	11,938	5,494		31,062
.....1926	11,495	605	650	10,538	5,602		28,890
February.....1925	12,223	632	647	10,440	5,504		29,446
.....1926	10,520	580	614	9,664	5,506		26,884
March.....1925	9,327	570	547	8,648	5,428		24,520
.....1926	9,571	616	537	8,318	5,178		24,220
April.....1925	2,448	620	369	6,717	5,355	4	15,513
.....1926	11,623	591	366	7,045	4,805		24,430
May.....1925	2,330	628	300	6,216	5,014	4	14,492
.....1926	12,503	536	335	6,195	4,927		24,496
June.....1925	2,325	651	309	6,634	5,072	4	14,995
.....1926	12,505	530	286	6,511	4,847		24,679
July.....1925	2,422	619	324	6,247	5,188	4	14,804
.....1926	12,615	513	271	6,463	4,809	2	24,673
August.....1925	9,935	627	309	7,069	5,213	4	23,157
.....1926	12,515	522	241	7,583	4,886	2	25,749
September.....1925	11,398	589	431	8,590	5,308	4	26,320
.....1926	12,501	489	388	9,057	4,918	2	27,355
October.....1925	11,595	588	713	9,682	5,360		27,938
.....1926	12,844	498	568	10,193	5,128		29,231
November.....1925	11,938	590	768	10,862	5,514		29,672
.....1926	13,089	522	698	11,114	5,264		30,687
December.....1925	11,831	617	727	11,181	5,582		29,938
.....1926	13,420	541	694	11,323	5,273		31,251
Average.....1925	8,333	614	517	8,689	5,336	4	23,490
.....1926	12,100	544	470	8,667	5,095	2	26,878

Table 392.—Wage-Earners Employed, Days' Work Done by Months, and Wages Paid in the Coal Mines of Canada, 1926

Month	Number of employees			Days' work done			Total Wages
	Surface	Under-ground	Total	Surface	Under-ground	Total	
January.....	6,684	22,206	28,890	133,585	359,272	492,857	Monthly records not available.
February.....	6,326	20,558	26,884	120,575	308,044	428,619	
March.....	5,897	18,323	24,220	124,973	314,092	439,065	
April.....	5,848	18,582	24,430	118,932	298,980	417,912	
May.....	5,849	18,647	24,496	124,386	326,870	451,256	
June.....	5,807	18,872	24,679	145,011	420,872	565,883	
July.....	5,810	18,863	24,673	137,373	402,147	539,520	
August.....	6,011	19,738	25,749	141,096	408,886	549,982	
September.....	6,266	21,089	27,355	144,350	432,249	576,599	
October.....	6,679	22,552	29,231	164,291	513,481	677,772	
November.....	6,986	23,701	30,687	169,811	521,746	691,557	
December.....	7,059	24,192	31,251	176,423	548,582	725,005	
<b>Total.....</b>				<b>1,700,806</b>	<b>4,855,221</b>	<b>6,556,027</b>	<b>\$32,603,276</b>
<b>Average.....</b>	<b>6,268</b>	<b>20,610</b>	<b>26,878</b>	<b>271 days per year</b>	<b>235 days per year</b>	<b>244 days per year</b>	<b>\$4.97 per day</b>

Table 393.—Wage-Earners Employed in the Coal Mines of Canada, by Classes and by Provinces, 1926

Classification	Province					Canada			
	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Surface	Under-ground	Total
<b>SURFACE—</b>									
Administration.....	81	15	10	99	34		215	24	239
Foremen and clerks.....	135	18	13	212	123		488	13	501
Screenmen and loaders.....	585	23	28	586	198		1,414	6	1,420
<b>UNDERGROUND—</b>									
Officials.....	404	4	9	324	150		7	884	891
Hand cutters and helpers.....	1,734	369	216	2,389	1,589	1	6	6,292	6,298
Machine cutters.....	1,500	3	12	384	38			1,937	1,937
Machine loaders and helpers.....	1,352	12	46	1,346	95			2,851	2,851
Horse haulage employees.....	723	1	42	696	401		28	1,835	1,863
Mechanical haulage employees.....	1,443	5	6	328	324		74	2,032	2,106
Ventilation employees.....	343		1	83	42		4	465	469
Roadmakers.....	279	4	16	170	104		8	565	573
Timbermen.....	637	18	6	305	178		15	1,119	1,134
Pumpmen.....	110	2	5	47	45		7	202	209
<b>MISCELLANEOUS—</b>									
Enginemmen.....	211	9	10	156	86	1	459	14	473
Firemen.....	161	4	10	115	59		348	1	349
Machinists.....	226	1	2	69	74		365	7	372
Carpenters and masons.....	125	7	6	63	90		289	2	291
Other mechanics.....	226	3	4	105	134		309	163	472
All other white employees.....	1,835	46	28	1,190	858		1,992	1,965	3,957
Japanese.....					72		17	55	72
Chinese.....					394		217	177	394
Indians.....					7		6	1	7
<b>Total.....</b>	<b>12,100</b>	<b>544</b>	<b>470</b>	<b>8,667</b>	<b>5,095</b>	<b>2</b>	<b>6,268</b>	<b>20,610</b>	<b>26,878</b>

Table 394.—Power Employed in the Coal Mines of Canada, by Provinces, 1926

Description	Nova Scotia		New Brunswick		Saskatchewan		Alberta		British Columbia		Canada	
	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated	No. of units	Total h.p. rated
Steam engines and turbines.	107	46,831	13	983	24	1,422	250	31,329	119	20,507	513	101,072
Internal combustion engines.	3	26			2	11	46	58	4	81	55	376
Hydraulic turbines or water wheels.....									2	12,000	2	12,000
<i>Total primary power....</i>	<i>110</i>	<i>46,857</i>	<i>13</i>	<i>983</i>	<i>26</i>	<i>1,433</i>	<i>296</i>	<i>31,387</i>	<i>125</i>	<i>32,588</i>	<i>570</i>	<i>113,448</i>
Electric motors run by purchased power.....	161	6,095					382	15,338	4	535	547	21,968
<b>Total power employed</b>	<b>271</b>	<b>52,952</b>	<b>13</b>	<b>983</b>	<b>26</b>	<b>1,433</b>	<b>678</b>	<b>46,925</b>	<b>129</b>	<b>33,123</b>	<b>1,117</b>	<b>135,416</b>
Electric motors run by primary power in same plant.....	267	23,556	24	373	19	339	285	7,267	204	15,042	799	46,577
<i>Total electric motors....</i>	<i>428</i>	<i>29,651</i>	<i>24</i>	<i>373</i>	<i>19</i>	<i>339</i>	<i>667</i>	<i>22,605</i>	<i>208</i>	<i>15,577</i>	<i>1,346</i>	<i>68,545</i>
Boilers.....	151	40,447	15	1,030	12	1,820	188	23,906	87	13,292	453	80,495
Electric power used during the year—												
Quantity in kilowatt-hours.....		69,965,471		1,011,000		216,600		26,460,046		16,889,765		114,542,882
Value.....\$		965,570		26,285		3,290		530,347		211,751		1,737,243

## 2.—Commodity Statistics on Coal

(Including Tables on Output, Disposition, Shipments, Tonnage Lost, Imports into Canada and Exports, Consumption and World Output)

Table 395.—Output of Coal from Canadian Mines, 1785-1926

Year	Short tons	Value	Average per ton	Year	Short tons	Value	Average per ton
		\$	\$			\$	\$
1785-1880.....	16,426,253	28,190,518	1.72	1904.....	8,254,595	16,592,231	2.01
1881.....	1,537,106	2,688,621	1.75	1905.....	8,667,948	17,520,263	2.02
1882.....	1,848,148	3,248,446	1.76	1906.....	9,762,601	19,732,019	2.02
1883.....	1,818,684	3,109,635	1.71	1907.....	10,511,426	24,381,842	2.32
1884.....	1,984,959	3,593,831	1.81	1908.....	10,886,311	25,194,573	2.31
1885.....	1,920,977	3,417,807	1.78	1909.....	10,501,475	24,781,236	2.36
1886.....	2,116,653	3,739,840	1.77	1910.....	12,909,152	30,909,779	2.39
1887.....	2,429,330	4,388,206	1.81	1911.....	11,323,388	26,467,646	2.34
1888.....	2,602,552	4,674,140	1.80	1912.....	14,512,829	36,019,044	2.48
1889.....	2,658,303	4,894,287	1.84	1913.....	15,012,178	37,334,940	2.49
1890.....	3,084,682	5,676,247	1.84	1914.....	13,637,529	33,471,801	2.45
1891.....	3,577,749	7,019,425	1.96	1915.....	13,267,023	32,111,182	2.42
1892.....	3,287,745	6,363,757	1.94	1916.....	14,483,395	38,817,481	2.68
1893.....	3,783,499	7,359,080	1.95	1917.....	14,046,759	43,199,831	3.08
1894.....	3,847,070	7,429,468	1.93	1918.....	14,977,926	55,192,896	3.68
1895.....	3,478,344	6,739,153	1.94	1919*	13,919,096	55,622,670	3.99
1896.....	3,745,716	7,226,462	1.93	1920*	16,946,764	82,496,538	4.86
1897.....	3,786,107	7,303,597	1.93	1921*	15,057,493	72,451,656	4.81
1898.....	4,173,108	8,224,288	1.97	1922*	15,157,431	65,518,497	4.32
1899.....	4,925,051	10,283,497	2.09	1923*	16,990,571	72,058,986	4.24
1900.....	5,777,319	13,742,178	2.38	1924*	13,638,197	53,593,988	3.93
1901.....	6,486,325	12,699,243	1.96	1925*	13,134,968	49,261,951	3.75
1902.....	7,466,681	15,210,877	2.04	1926*	16,478,131	59,875,094	3.63
1903.....	7,960,364	15,942,833	2.00				
				<b>Total.....</b>	<b>494,799,911</b>	<b>1,165,771,580</b>	<b>.....</b>

\*For the years 1919-1926 the tonnage shown is the total output from all mines: for previous years the tonnage shown includes only sales, colliery consumption, and coal used by the operators.

Table 396.—Output and Value of Coal in Canada by Kinds and by Provinces, 1924-1926

(Short tons)

Province	1924			1925			1926		
	Number of mines	Quantity	Value	Number of mines	Quantity	Value	Number of mines	Quantity	Value
			\$			\$			\$
NOVA SCOTIA (Bituminous).....	50	5,557,441	22,280,554	47	3,842,978	15,826,680	43	6,747,477	26,845,226
NEW BRUNSWICK (Bituminous).....	16	217,121	932,185	16	208,012	815,367	11	173,111	710,245
SASKATCHEWAN (Lignite).....	64	479,118	886,668	55	471,965	870,875	53	439,803	819,805
ALBERTA—									
Bituminous.....		1,514,382	6,839,892	19	2,145,635	8,423,909	16	2,858,456	9,984,386
Sub-bituminous.....		590,168	1,761,086	27	570,654	1,731,267	23	489,736	1,458,116
Lignite.....		3,085,179	10,283,340	307	3,152,742	9,866,308	277	3,155,513	9,443,601
Total.....	351	5,189,729	18,884,318	353	5,869,031	20,021,484	316	6,503,705	20,886,103
BRITISH COLUMBIA (Bituminous).....	38	2,193,667	10,601,998	39	2,742,252	11,720,373	33	2,613,719	10,612,915
YUKON (Bituminous).....	1	1,121	8,265	1	730	7,172	1	316	800
CANADA—									
Bituminous.....		9,483,732	40,662,894	122	8,939,607	36,793,501	104	12,393,079	48,153,572
Sub-bituminous.....		590,168	1,761,086	27	570,654	1,731,267	23	489,736	1,458,116
Lignite.....		3,564,297	11,170,008	362	3,624,707	10,737,183	330	3,595,516	10,263,406
Total.....	520	13,633,197	53,593,988	511	13,134,968	49,261,951	457	16,478,131	59,875,094

Table 397.—Disposition of Coal from Canadian Mines, 1925 and 1926

(Short tons)

	1925			1926		
	Total coal	Total value	Average value per ton	Total coal	Total value	Average value per ton
		\$	\$		\$	\$
Supplied to employees for domestic consumption.....	168,713	564,855	3.34	189,934	634,524	3.35
Used for power purposes—						
(a) Shops.....	3,741	13,704	3.66	4,009	14,410	3.59
(b) Colliery boilers.....	791,209	2,288,501	2.89	874,006	2,617,642	2.99
(c) Companies' railroads.....	51,634	193,743	3.75	69,139	260,829	3.77
(d) Harbour tugs and dredges.....	846	2,730	3.22	514	1,567	3.04
Shipped (See table 400)—						
(a) Ships' bunkers.....	429,362			727,680		
(b) Railroads.....	3,463,194	45,767,482	3.89	4,427,680	55,250,142	3.83
(c) Other.....	7,862,183			9,651,214		
Used in making coke at colliery.....	139,589	500,460	3.58	159,977	567,919	3.56
Used in making briquettes.....	729	2,991	4.10	10,343	41,790	4.05
Put on bank.....	511,514	1,819,862	3.55	545,402	1,903,692	3.49
Put on waste heap.....	262,087	768		267,620		
Total disposition.....	13,684,801	51,155,096	3.73	16,927,518	61,292,515	3.62
Lifted from bank.....	549,833	1,893,145	3.44	449,387	1,417,421	3.15
Total output.....	13,134,968	49,261,951	3.75	16,478,131	59,875,094	3.63

Table 398.—Disposition of Coal from Canadian Mines by Provinces, 1925

(Short tons)

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
Supplied to employees for domestic consumption.....	91,873	3,040	3,653	46,730	23,411	6	168,713
Coal shipped (see Table 400).....	3,418,173	202,179	440,252	5,518,734	2,174,764	637	11,754,739
Used under colliery boilers, etc.....	341,947	2,812	20,105	226,177	200,141	27	791,209
Used by companies' railroads.....	29,369		3,421	6,427	12,417		51,634
Used for manufacture of coke at colliery.....					139,589		139,589
Used in making briquettes.....				729			729
Used in shops, etc.....	3,741						3,741
Used by harbour tugs and dredges.....	846						846
Put on bank.....	340,411	7,834	1,982	55,969	105,318		511,514
Put on waste heap.....	6,747	54	4,005	72,864	177,757	60	262,087
<b>Total disposition.....</b>	<b>4,233,107</b>	<b>215,919</b>	<b>474,018</b>	<b>5,927,630</b>	<b>2,833,397</b>	<b>730</b>	<b>13,684,801</b>
Lifted from bank.....	390,129	7,907	2,053	58,599	91,145		549,833
<b>Total output.....</b>	<b>3,842,978</b>	<b>208,012</b>	<b>471,965</b>	<b>5,869,031</b>	<b>2,742,252</b>	<b>730</b>	<b>13,134,968</b>

Table 399.—Disposition of Coal from Canadian Mines by Provinces, 1926

(Short tons)

	Nova Scotia	New Brunswick	Saskatchewan	Alberta	British Columbia	Yukon	Canada
Supplied to employees for domestic consumption.....	122,204	3,086	3,241	41,594	19,809		189,934
Coal shipped (see Table 400).....	6,064,378	166,773	415,072	6,123,705	2,036,490	156	14,806,574
Used under colliery boilers, etc.....	439,943	3,215	17,094	227,274	186,474	6	874,006
Used by companies' railroads.....	45,164		3,240	6,424	14,311		69,139
Used for manufacture of coke at colliery.....					159,977		159,977
Used in making briquettes.....				10,343			10,343
Used in shops, etc.....	4,009						4,009
Used by harbour tugs and dredges.....	514						514
Put on bank.....	371,355	5,527	2,219	67,617	98,684		545,402
Put on waste heap.....	15,582	9	1,410	78,118	172,347	154	267,620
<b>Total disposition.....</b>	<b>7,063,149</b>	<b>178,610</b>	<b>442,276</b>	<b>6,555,075</b>	<b>2,688,092</b>	<b>316</b>	<b>16,927,518</b>
Lifted from bank.....	315,672	5,499	2,473	51,370	74,373		449,387
<b>Total output.....</b>	<b>6,747,477</b>	<b>173,111</b>	<b>439,803</b>	<b>6,503,705</b>	<b>2,613,719</b>	<b>316</b>	<b>16,478,131</b>

Table 400.—Shipments of Coal from Canadian Mines by Grades and Destinations, 1925 and 1926

(Short tons)

Destination	1925				1926			
	Run-of-mine	Screened	Slack	Total	Run-of-mine	Screened	Slack	Total
Prince Edward Island.....	4,921	51,310	633	56,864	8,744	74,888	3,598	87,230
Nova Scotia.....	435,378	465,148	381,480	1,282,006	320,123	582,864	789,546	1,692,533
New Brunswick.....	238,132	197,807	73,854	509,793	294,068	207,457	124,609	626,134
Quebec.....	68,937	369,408	373,419	811,764	43,951	1,119,591	805,004	1,968,546
Ontario.....	765	31,285	743	32,793	68	60,737	16,484	77,289
Manitoba.....	142,724	515,274	86,571	744,569	163,482	451,619	185,954	801,055
Saskatchewan.....	218,545	1,185,712	116,921	1,521,178	200,890	960,406	353,131	1,514,427
Alberta.....	260,181	873,849	309,289	1,443,319	259,829	506,690	530,702	1,297,221
British Columbia.....	122,476	657,085	247,664	1,027,225	77,516	545,746	305,188	928,550
Yukon.....		335	302	637		150		150
<b>Total domestic shipments.....</b>	<b>1,492,059</b>	<b>4,347,213</b>	<b>1,590,876</b>	<b>7,430,148</b>	<b>1,368,671</b>	<b>4,510,154</b>	<b>3,114,216</b>	<b>8,993,041</b>
Railroads.....	2,969,508	360,054	133,632	3,463,194	3,769,089	392,136	270,632	4,431,857
Ships' bunker.....	161,711	260,457	7,194	429,362	455,278	268,066	4,336	727,680
<b>Total railroads and ships' bunker.....</b>	<b>3,131,219</b>	<b>620,511</b>	<b>140,826</b>	<b>3,892,556</b>	<b>4,224,367</b>	<b>660,202</b>	<b>274,968</b>	<b>5,159,537</b>
United States.....	41,332	165,285	33,362	239,979	15,874	126,052	55,583	197,509
Newfoundland.....	29,384	148,143	9,834	187,361	21,420	237,514	10,075	269,009
West Indies.....					6,736			6,736
Europe.....					10,687	2,779		13,466
United Kingdom and Irish Free State.....					139,085	11,829		150,914
Other places.....	1,463	3,232		4,695	7,733	3,864		11,597
Lost at sea.....						4,765		4,765
<b>Total external shipments.....</b>	<b>72,179</b>	<b>316,660</b>	<b>43,196</b>	<b>432,035</b>	<b>201,535</b>	<b>386,803</b>	<b>65,658</b>	<b>653,996</b>
<b>Total.....</b>	<b>4,695,457</b>	<b>5,284,384</b>	<b>1,774,898</b>	<b>11,754,739</b>	<b>5,794,573</b>	<b>5,557,159</b>	<b>3,454,842</b>	<b>14,806,574</b>

**Table 401.—Tonnage Lost in the Coal Mines of Canada in 1924-1926 Showing by Provinces the Relative Percentages Produced and Lost with an Analysis of the Percentage Lost.**

Province	Per cent produced	Per cent lost	Percentage lost through				
			Absenteeism	Lack of orders	Car shortage	Mine disability	Other causes
Nova Scotia.....1924	65	35	3.2	21.7	0.6	1.5	8.0
1925	78	22	2.7	14.6	—	2.1	2.6
1926	81	19	3.4	10.8	0.5	2.7	1.6
New Brunswick.....1924	83	17	3.9	10.5	0.1	0.2	2.3
1925	86	14	2.1	8.5	—	0.1	3.3
1926	82	18	2.8	8.4	0.6	0.4	5.8
Saskatchewan.....1924	65	35	0.3	32.6	0.2	—	1.9
1925	68	32	—	31.0	—	—	1.0
1926	65	35	0.1	32.5	0.1	0.6	1.7
Alberta.....1924	66	34	0.6	13.9	0.7	0.5	18.3
1925	69	31	0.7	24.7	0.9	0.9	3.8
1926	74	26	0.9	21.2	0.5	0.5	2.9
British Columbia.....1924	80	20	1.9	14.4	0.3	0.1	3.3
1925	86	14	2.1	10.7	0.4	0.1	0.7
1926	81	19	1.8	16.3	—	0.4	0.5
Canada.....1924	67	33	2.4	17.9	0.6	0.8	11.3
1925	75	25	1.5	19.2	0.5	1.1	2.7
1926	78	22	2.0	16.5	0.3	1.2	2.0

**Table 402.—Imports of Anthracite Coal into Canada from Great Britain, by Grades and by Provinces, 1924-1926**

(Short tons)

Destination	1924		1925		1926	
	Egg, nut, etc.	Dust	Egg, nut etc.	Dust	Egg, nut, etc.	Dust
Prince Edward Island.....			507			
Nova Scotia.....	12,461		20,679		11,523	
New Brunswick.....	25,579		29,256		35,197	
Quebec.....	229,142		474,390	3,833	207,869	
Ontario.....	6,251	1,844	20,564		12,589	
British Columbia.....			18		4,992	
Canada.....	273,433	1,844	545,414	3,833	272,170	

**Table 403.—Imports of Bituminous Coal into Canada from Great Britain, by Provinces, 1924-1926**

(Short tons)

Destination	1924		1925	1926
	Round and run-of-mine	Slack	All grades	All grades
Prince Edward Island.....			13,436	
Nova Scotia.....	246		19	
New Brunswick.....	15		5,103	110
Quebec.....	18,708	21,134	38,264	3,065
British Columbia.....				*768
Canada.....	18,969	21,134	56,822	3,943

\* Includes 39 tons of lignite coal from Great Britain.

Table 404.—Imports of Anthracite Coal into Canada from the United States by Grades and by Provinces, 1924-1926

(Short tons)

Destination	1924		1925		1926	
	Egg, nut, etc.	Dust	Egg, nut, etc.	Dust	Egg, nut, etc.	Dust
Prince Edward Island.....	3,571		4,624		5,344	
Nova Scotia.....	37,616		33,393		39,186	8
New Brunswick.....	53,681	251	45,010	683	61,432	272
Quebec.....	933,390	157,181	764,295	132,651	1,051,662	201,584
Ontario.....	2,615,688	65,310	2,149,016	84,469	2,389,779	115,311
Manitoba.....	30,324	3,898	28,182	6,214	13,981	4,009
Saskatchewan.....	1,687	33	702		464	
Alberta.....			30			
British Columbia.....	687		228		210	
<b>Canada.....</b>	<b>3,681,644</b>	<b>226,673</b>	<b>3,025,480</b>	<b>224,017</b>	<b>3,562,058</b>	<b>321,184</b>

Table 405.—Imports of Bituminous and Lignite Coal into Canada from the United States by Provinces, 1924-1926

(Short tons)

Destination	1924			1925		1926	
	Bituminous		Lignite	Bituminous	Lignite	Bituminous	Lignite
	Round and run-of-mine	Slack		All grades		All grades	
Prince Edward Island.....	3,597			9,208		1,622	
Nova Scotia.....	60,209	6,959		178,985	10	23,921	
New Brunswick.....	42,657	29,880		163,982		97,548	
Quebec.....	993,281	532,235		2,530,661		1,793,990	
Ontario.....	8,138,908	2,598,940		9,884,710		11,696,108	
Manitoba.....	43,384	100,225		147,758		149,374	
Saskatchewan.....	889	1,533	139	1,732		1,387	
Alberta.....	826	383		1,175		1,515	
British Columbia.....	7,951	15,305	25,763	39,550	18,358	31,960	10,926
Yukon.....	24			4		10	
<b>Canada.....</b>	<b>9,291,726</b>	<b>3,285,460</b>	<b>25,902</b>	<b>12,957,765</b>	<b>18,368</b>	<b>13,797,935</b>	<b>10,926</b>

Table 406.—Average Imports of Coal into Canada by Kinds and by Provinces for the Five Years 1922-1926

(Short tons)

Destination	Anthracite			Total bituminous	Total all grades
	Egg, nut, etc.	Dust	Total		
Prince Edward Island.....	4,587		4,587	6,006	10,683
Nova Scotia.....	47,569	13	47,582	66,449	114,031
New Brunswick.....	80,931	294	81,275	104,386	185,661
Quebec.....	1,210,499	189,070	1,399,569	2,203,617	3,603,186
Central Ontario.....	2,287,900	94,281	2,382,181	9,535,009	11,917,190
Head of Lakes.....	66,560	1,630	68,190	1,633,229	1,701,419
<b>Total Ontario.....</b>	<b>2,354,460</b>	<b>95,911</b>	<b>2,450,371</b>	<b>11,168,238</b>	<b>13,618,609</b>
Manitoba.....	27,551	3,885	31,436	125,545	156,981
Manitoba and Head of Lakes.....	94,111	5,515	99,626	1,758,774	1,858,400
Saskatchewan.....	1,017	64	1,081	1,854	2,935
Alberta.....	6		6	1,231	1,237
British Columbia.....	1,514		1,514	37,526	39,040
Yukon.....				15	15
<b>Canada.....</b>	<b>3,728,184</b>	<b>289,237</b>	<b>4,017,421</b>	<b>13,714,957</b>	<b>17,732,378</b>

Table 407.—Average Imports of Coal into Central Canada by Principal Areas for the Five Years 1922-1926

(Short tons)

Destination	Anthracite			Total bituminous	Total all grades
	Egg, nut, etc.	Dust	Total		
Quebec.....	84,986	2,298	87,284	227,684	314,968
Montreal.....	1,106,265	185,359	1,291,624	1,906,381	3,198,005
Ottawa.....	245,815	26,153	271,968	752,588	1,024,556
Kingston.....	106,051	1,644	107,695	203,834	311,529
Toronto.....	1,636,000	63,298	1,699,298	4,904,020	6,603,318
Windsor.....	298,520	4,329	302,849	2,773,413	3,076,262
<b>Total.....</b>	<b>3,477,637</b>	<b>283,081</b>	<b>3,760,718</b>	<b>10,767,920</b>	<b>14,528,638</b>

Table 408.—Exports of Canadian Coal by Destination, 1924-1926

Destination	1924		1925		1926	
	Short tons	Value	Short tons	Value	Short tons	Value
		\$		\$		\$
<b>BRITISH EMPIRE</b>						
United Kingdom.....	21,335	153,912	23,224	172,138	93,620	620,490
Irish Free State.....	1,738	10,725	1,688	10,325	81,600	489,964
British South Africa.....	3,289	22,005	7,736	46,159	9,200	55,890
British West Africa.....	2,903	16,548				
Bermuda.....	10,511	67,862	4,182	30,321	619	4,510
British Guiana.....	3,837	32,309	4,651	38,110		
British West Indies—						
Barbados.....	4,287	24,650	651	5,371		
Jamaica.....						
Other B.W.I.....	649	5,354	8,451	50,712	1,845	15,056
Egypt and Sudan.....			351	2,913	1,114	9,277
Gibraltar.....	5,431	34,179	2,197	13,185	1,607	11,442
Newfoundland.....	248,140	1,457,872	183,245	1,071,624	276,116	1,484,290
Sierra Leone.....					3,256	19,533
Australia.....	12,415	97,666	13,688	117,653	19,257	149,004
New Zealand.....	978	8,117	6,127	36,762	1,197	7,182
<b>Total British Empire.....</b>	<b>315,543</b>	<b>1,931,199</b>	<b>256,191</b>	<b>1,595,273</b>	<b>489,431</b>	<b>2,866,638</b>
<b>FOREIGN COUNTRIES</b>						
Argentina.....	675	4,053			4,725	39,217
Belgium.....	1,528	9,904	2,707	16,627	10,334	74,699
Brazil.....					1,210	6,050
Chile.....					666	3,996
China.....	3,160	21,158			635	5,191
Cuba.....	378	3,142	1,073	6,638		
Denmark.....	1,362	9,335	1,197	7,309	2,150	14,235
France.....	9,751	67,745	525	3,467	23,584	151,293
French Possessions—						
French Africa.....	737	4,422	296	1,776		
French West Indies.....	439	2,784				
St. Pierre and Miquelon.....	7,047	45,511	5,239	31,069	3,328	19,040
Germany.....	1,538	9,231	1,508	9,048	5,725	40,717
Greece.....	6,098	37,154			2,995	18,762
Haiti.....					338	1,690
Iceland.....					203	1,218
Italy.....	14,985	92,342	4,566	27,396	16,378	110,904
Japan.....	40,047	309,546	6,325	42,986	13,183	89,223
Mexico.....			5,600	45,650	1,827	14,304
Netherlands.....	14,862	90,132	1,081	6,486	5,298	33,833
Norway.....	405	2,430			1,337	7,346
Panama.....	1,551	9,306	4,238	35,024	832	6,593
Peru.....					446	2,676
Portugal.....					898	5,388
Azores and Maderia.....			231	1,383		
Portuguese Africa.....			1,209	10,035		
Russia.....					5,734	47,592
Spain.....			234	1,401		
Canary Islands.....					7,648	37,769
Sweden.....	2,560	15,390				
United States.....	308,448	1,853,991	451,082	2,148,933	404,134	1,950,992
Alaska.....	22,585	160,473	30,728	237,673	24,710	187,364
Philippines.....	19,547	157,300	11,980	100,999		
Uruguay.....					451	2,706
<b>Total foreign countries.....</b>	<b>457,703</b>	<b>2,905,349</b>	<b>529,719</b>	<b>2,733,900</b>	<b>538,769</b>	<b>2,872,798</b>
<b>Total.....</b>	<b>773,246</b>	<b>4,836,548</b>	<b>785,910</b>	<b>4,329,173</b>	<b>1,028,200</b>	<b>5,739,436</b>

Table 409.—Annual Consumption of Coal in Canada, 1902-1926

(Short tons)

Calendar year	Canadian†		Imported coal "entered for consumption"				Total	Per capita
			From U.S.A.	From Great Britain	Total*			
	Short tons	%	Short tons	Short tons	Short tons	%		
1902.....	5,376,413	53.1	4,656,286	101,726	4,734,559	46.9	10,110,972	1.848
1903.....	6,005,735	47.3	6,520,931	184,593	6,678,450	52.7	12,684,185	2.212
1904.....	6,697,183	47.9	7,238,869	85,687	7,297,482	52.1	13,994,665	2.412
1905.....	7,032,661	49.4	7,233,738	68,500	7,215,446	50.6	14,248,107	2.341
1906.....	7,927,560	50.5	7,787,338	67,014	7,758,325	49.5	15,685,885	2.481
1907.....	8,617,352	45.0	10,588,697	54,325	10,549,503	55.0	19,166,855	2.947
1908.....	9,156,478	47.3	10,203,335	97,514	10,195,424	52.7	19,351,902	2.820
1909.....	8,913,376	47.9	9,805,253	67,671	9,711,826	52.1	18,625,202	2.682
1910.....	10,532,103	50.2	10,545,451	51,541	10,437,123	49.8	20,969,226	2.960
1911.....	9,822,749	40.5	14,510,129	48,963	14,424,949	59.5	24,247,698	3.365
1912.....	12,385,696	46.0	14,557,124	38,668	14,549,104	54.0	26,934,800	3.657
1913.....	13,450,158	42.6	18,145,769	37,825	18,132,387	57.4	31,582,545	4.196
1914.....	12,214,403	45.5	14,687,853	33,101	14,637,920	54.5	26,852,323	3.490
1915.....	11,500,480	48.1	12,450,796	15,098	12,406,212	51.9	23,906,692	3.041
1916.....	12,348,036	41.3	17,576,202	4,401	17,517,820	58.7	29,865,856	3.717
1917.....	12,313,603	37.2	20,848,009	9,451	20,810,132	62.8	33,123,735	4.049
1918.....	13,160,731	37.8	21,674,826	3,761	21,611,101	62.2	34,771,832	4.175
1919.....	11,611,168	40.3	17,292,913	344	17,236,269	59.7	28,847,437	3.402
1920.....	14,025,566	42.9	18,752,981	.....	18,668,741	57.1	32,694,307	3.788
1921.....	12,715,734	41.1	18,300,081	1,591	18,258,387	58.9	30,974,121	3.524
1922.....	13,044,352	50.2	12,255,555	765,980	12,962,189	49.8	26,006,541	2.909
1923.....	15,070,962	41.8	20,417,239	572,570	20,967,971	58.2	36,038,933	3.968
1924.....	12,529,358	42.8	16,405,344	317,112	16,714,143	57.2	29,243,501	3.170
1925.....	12,125,290	42.6	15,744,957	604,117	16,331,971	57.4	28,457,561	3.039
1926.....	15,449,831	48.3	16,204,405	287,299	16,565,555	51.7	32,015,386	3.329

†The sum of Canadian coal mine sales, colliery consumption, coal supplied to employees, and coal used in making coke, etc., less the tonnage of coal exported.

\*Includes small tonnages from countries other than Great Britain and United States. Deductions have been made to take account of foreign coal re-exported from Canada.

Table 410.—World Production of Coal\* 1923-1926

(Including brown coal)

(Long tons)

Country	1923	1924	1925	1926
<b>BRITISH EMPIRE</b>				
Great Britain—				
Anthracite.....	5,282,160	5,425,643	6,126,389	2,876,655
Bituminous (a).....	270,718,400	261,692,524	237,049,842	123,401,866
Nigeria (b).....	175,137	220,161	242,582	353,274
Southern Rhodesia.....	551,158	582,187	678,320	860,338
Union of South Africa.....	11,074,649	11,633,370	12,127,188	12,745,497
Canada—				
Anthracite.....	96	.....	.....	.....
Bituminous.....	11,555,247	8,467,618	7,981,792	11,065,249
Sub-bituminous.....	416,511	526,936	509,513	437,264
Lignite.....	3,198,299	3,182,408	3,236,345	3,210,104
British Borneo—				
British North Borneo.....	62,670	90,000	79,941	(g)
Brunei.....	19,329	18,323	.....	.....
Sarawak.....	.....	18,959	19,678	19,683
Federated Malay States.....	317,892	372,795	408,084	464,284
India—				
Gondwana Coalfields.....	19,217,176	20,696,338	20,447,898	(i) 20,093,024
Tertiary Coalfields.....	439,707	477,946	456,479	
Australia—				
Bituminous.....	12,517,430	13,757,500	13,626,777	13,250,000
Lignite.....	116,888	127,490	76,468	957,935
New Zealand—				
Bituminous.....	935,697	1,085,004	1,044,726	1,196,388
Brown Coal.....	860,360	839,017	911,425	905,825
Lignite.....	173,777	159,186	158,844	137,786
Total.....	338,000,000	329,000,000	306,000,000	162,000,000
<b>FOREIGN COUNTRIES</b>				
Austria—				
Bituminous.....	155,117	169,195	142,866	154,780
Brown coal.....	2,642,308	2,741,044	2,984,627	2,910,193
Belgium—				
Anthracite and semi-anthracite.....	4,964,048	5,067,144	4,768,010	24,912,648
Bituminous.....	17,589,897	17,919,307	17,957,828	.....
Bulgaria—				
Bituminous.....	60,610	68,550	71,827	1,185,539
Brown coal.....	985,957	1,120,766	1,131,353	
Czecho-Slovakia—				
Bituminous.....	11,437,922	14,934,995	12,357,151	14,176,612
Brown coal.....	15,942,098	20,130,874	18,305,674	18,314,748

Table 410.—World Production of Coal\* 1923-1926—Concluded

Country	1923	1924	1925	1926
FOREIGN COUNTRIES—Concludea				
France—				
Saar.....		13,806,602	12,781,085	13,450,900
Other districts—				
Anthracite and bituminous.....	46,118,206	43,311,590	46,261,990	50,581,400
Lignite.....	863,026	947,048	991,082	1,039,200
Germany—				
Bituminous.....	61,314,625	116,859,965	130,490,698	143,026,710
Brown coal.....	116,875,952	122,634,103	137,479,040	137,629,377
Greece—				
Brown coal.....	112,193	129,002	139,793	(d) 150,000
Hungary—				
Bituminous.....	848,890	732,430	792,080	813,618
Brown coal.....	6,736,958	6,231,501	5,242,900	5,559,263
Lignite.....				169,185
Italy—				
Anthracite.....	9,485	11,635	14,072	14,021
Bituminous.....	161,423	103,440	164,523	1,347,618
Brown coal.....	938,137	902,746	1,087,707	
Jugo-Slavia—				
Bituminous.....	132,355	129,518	175,588	(f) 187,747
Brown coal.....	2,103,792	3,070,927	2,950,755	(f) 3,913,023
Lignite.....	1,294,296	917,998	958,757	
Netherlands—				
Bituminous.....	5,195,706	5,787,020	6,738,501	8,469,225
Brown coal.....	53,314	188,129	204,286	207,800
Poland—				
Bituminous.....	35,517,851	31,706,783	28,613,134	35,064,562
Brown coal.....	168,285	86,623	63,481	74,804
Portugal—				
Anthracite.....	127,004	125,782	121,466	(f) 198,834
Brown coal.....	15,696	7,990	16,697	(f) 30,208
Roumania—				
Anthracite.....	58,348	148		
Bituminous.....	228,943	292,363	308,532	317,013
Brown coal.....	2,193,580	2,439,241	2,573,247	2,687,465
Russia—				
Bituminous—				
European.....		12,400,000	13,700,000	20,000,000
Asiatic.....	10,437,000	1,400,000	2,250,000	3,347,000
Brown coal.....		1,514,000	887,000	1,000,000
Spain—				
Anthracite.....	294,263	311,108	310,959	381,931
Bituminous.....	5,581,214	5,717,998	5,708,069	5,915,539
Brown coal.....	387,932	405,155	396,218	482,199
Spitzbergen and Bear Island.....	335,482	444,651	406,768	(e) 286,531
Sweden.....	412,826	430,819	259,638	377,507
Algeria.....	3,180	9,080	9,869	13,600
Belgian Congo.....	55,000	80,000	80,000	88,800
Tunis (brown coal).....	610	300		
Greenland.....	2,083		2,500	2,500
Mexico.....	1,241,267	1,206,981	1,256,869	1,238,691
United States—				
Anthracite.....	83,338,401	78,506,217	55,193,883	75,390,582
Bituminous (c).....	504,068,448	431,862,980	464,332,804	516,330,000
Brazil.....	318,944	263,847	386,070	(g)
Chile.....	1,145,320	1,514,405	1,429,873	1,440,692
Peru.....	249,000	152,029	100,482	(f) 163,311
Venezuela.....	25,631	24,426	24,528	(g)
China (d).....	24,000,000	20,632,000	21,000,000	22,000,000
Dutch East Indies.....	1,138,036	1,446,731	1,378,213	(f) 1,442,800
Formosa.....	1,421,777	1,482,240	1,650,000	(g)
French Indo-China—				
Anthracite.....	985,339	1,151,757	1,288,524	
Bituminous.....	49,259	59,769	46,894	(d) 1,243,200
Brown coal.....	5,337	4,492	5,647	
Japan.....				
Semi-anthracite.....	125,857	108,554	88,433	
Bituminous.....	28,357,714	29,518,348	30,865,385	(d) 28,037,000
Brown coal.....	149,028	173,923	166,703	
Karafuto.....		196,181	246,587	
Korea.....	275,478	392,996	614,206	671,921
Kwantung Peninsula.....	(e) 2,143,000	(g)	(g) 47,142	(f) 28,118
Philippine Islands.....	41,000	46,518	733,235	(d) 950,000
Turkey in Asia (h).....		756,713	733,235	(d) 950,000
Total.....	1,000,000,000	1,010,000,000	1,040,800,000	1,150,000,000
Total.....	1,340,000,000	1,340,000,000	1,350,000,000	1,343,000,000

\*Date obtained from *The Mineral Industry of the British Empire and Foreign Countries*.

(a) Including a small quantity of anthracite mined in the Fife and Clackmannan district.

(b) Years ended 31st March of the year following that stated.

(c) Including brown coal.

(d) Approximate production.

(e) Exports.

(f) Data obtained from the *United States Bureau of Mines*.

(g) Information not available.

(h) Héracleée-Zoungouldak coal basin.

(i) Production from mines under the control of the Indian Mines Act only.

## THE COKE INDUSTRY IN CANADA

The production of gas-house and by-product coke in Canada during 1926 totalled 2,027,058 tons, an increase of 31 per cent over the output for the previous year. Of this total output 1,555,962 tons were produced in the coke industry and 471,096 tons were recovered as a by-product from artificial gas plants. In addition there was also recovered as a by-product of the petroleum industry some 51,545 tons of petroleum coke.

Statistics given in Table 411 refer only to by-product coke plants, or those plants making coke as the primary product.

The 6 plants included in the coke and by-products industry in 1926 represented a capital investment of nearly 25 million dollars, employed an average of 615 persons the year round and paid out \$1,013,752 in salaries and wages. Materials worth \$9,744,081 were converted into products having a selling value of \$15,261,474. There were 3 plants in Ontario, 2 in British Columbia and 1 in Nova Scotia.

Imports of coke during the year totalled 988,034 tons, an increase of 16 per cent over the total of 852,427 tons brought in during 1925. Exports of by-product and gas coke totalled 41,699 tons, as against 25,578 tons in the previous year. In addition 19,546 tons of petroleum coke were exported during 1926 and 19,414 tons during 1925.

**Table 411.—Principal Statistics in the Coke and By-Products Industry in Canada, 1922-1926**

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of materials	Selling value of products	Value added by manufacturing
		\$		\$	\$	\$	\$
1922.....	6	20,363,785	533	716,893	6,130,628	7,336,627	1,205,999
1923.....	5	20,494,442	598	842,376	11,437,863	13,901,445	2,463,582
1924.....	6	24,315,744	530	900,992	6,879,516	10,438,462	3,558,946
1925.....	6	23,905,454	583	885,637	7,112,311	11,020,298	3,907,987
1926.....	6	24,769,899	615	1,013,752	9,744,081	15,261,474	5,517,393

Table 412.—Production in Canada, Imports and Exports of Coke and its By-Products, 1924-1926

	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
<b>COKE—</b>		\$		\$		\$
Coal charged to ovens or retorts—						
(a) In coke plants:						
Domestic..... Tons	584,304	2,110,064	598,280	2,070,313	938,134	3,041,854
Foreign..... Tons	826,613	4,415,142	930,738	4,723,140	1,254,866	6,379,663
(b) In gas plants:						
Bituminous—Domestic..... Tons	681,480	4,723,734	723,394	4,395,445	80,923	416,645
Foreign..... Tons					620,360	3,857,538
Anthracite..... Tons	20,064	251,899	15,323	183,050	3,477	41,277
Total..... Tons	2,112,461	11,500,839	2,267,735	11,371,948	2,897,760	13,736,977
Output of coke, by provinces—						
Nova Scotia and New Brunswick. Tons	259,376	1,621,123	307,253	1,667,781	484,760	2,373,863
Quebec..... Tons	139,435	1,110,537	197,703	1,087,366	162,169	891,485
Ontario..... Tons	812,939	6,038,724	830,839	5,967,333	1,144,493	8,208,124
Manitoba..... Tons	28,450	336,762	30,660	326,882	34,509	371,715
British Columbia..... Tons	130,399	1,181,657	180,284	1,433,479	201,127	1,460,738
Total..... Tons	1,370,599	10,288,803	1,546,739	10,482,841	2,027,058	13,305,925
Imports of coke..... Tons	521,725	3,131,485	852,427	5,553,494	988,034	6,566,686
Exports of coke..... Tons	23,144	393,979	25,578	214,820	41,699	316,154
Apparent consumption of coke*..... Tons	1,869,180	13,026,309	2,373,588	15,821,515	2,973,393	19,556,457
<b>OTHER PRODUCTS—</b>						
Production in Canada—						
Ammonium sulphate..... Tons	17,343	865,530	18,251	909,097	23,655	1,015,578
Gas: (a) From coke plants..... M cu. ft.	6,380,983	1,879,296	12,124,442	2,030,129	17,891,146	2,793,982
(b) From gas plants..... M cu. ft.	13,227,402		13,507,487		14,067,676	
Light oils..... Imp. gal.	1,810,301	216,805	2,100,705	263,503	1,989,409	131,999
Tar and tar products..... Imp. gal.	19,007,522	736,034	18,804,192	1,050,655	24,949,885	1,494,786
All other products†.....		346,762		105,178		366,412
<b>IMPORTS—</b>						
Ammonium sulphate..... Tons	388	27,111	398	27,544	2,298	135,455
Coal tar and pitch..... Gal.	2,880,499	186,178	3,636,880	258,944	3,681,324	256,061
Coal tar base or salt..... Tons	81	33,397	111	50,617		
<b>EXPORTS—</b>						
Ammonium sulphate..... Tons	13,357	681,709	12,560	637,310	16,382	813,115
Tar and pitch..... Gal.	2,339,041	273,900	2,658,851	188,007	4,642,453	374,395

\* Production data includes the output of the *Coke and its By-products Industry* and of the *Illuminating and Fuel Gas Industry*.

† Includes the consumption in companies' own coke plants and in associated metallurgical works.

‡ Includes motor fuel, ammonia liquor and other products.

## THE NATURAL GAS INDUSTRY

### CANADA

No records are available prior to 1892, as to the production of natural gas in Canada. An estimate of the value of gas produced during that year placed the total at \$150,000.

Extensive developments in the oilfields of Ontario made large quantities of natural gas available for consumption. From 1892 to 1902 inclusive, Ontario is the only province for which we have gas production records. In 1903, the first production from other provinces was recorded. The value of natural gas produced in Canada during 1903 was approximately \$202,000 and from that year onward, there was an annual increase in production until in 1917, a total value of \$5,045,298 was obtained for 27,408,940 thousand cubic feet—the maximum recorded production for Canada. Owing to the increased prices received by producers, the valuation of the 1917 record output, has been surpassed annually since 1922.

Natural gas wells in operation in Canada during 1926 numbered 2,247. In the previous year 2,236 wells were producing.

This industry contributed 3.14 per cent of the total value of all minerals produced in Canada in 1926. Ontario consumers totalled 64,575, representing a population of 600,790, practically all of whom use natural gas for house heating. A total of 25,322 consumers in areas with a population of about 152,967 are supplied with natural gas in Alberta.

Production during 1926 showed a substantial increase over the total for the preceding year; the year's production amounted to 19,208,209 thousand cubic feet valued at \$7,557,174; in 1925 the figures were 16,902,897 thousand feet worth \$6,833,005. The province of Alberta continued to hold the premier position with a total of 10,794,697 thousand cubic feet; Ontario was next in order with 7,764,996 thousand cubic feet; and New Brunswick followed with 648,316 thousand cubic feet. Average prices per thousand cubic feet were as follows: New Brunswick, 19 cents; Ontario, 56.8 cents; and Alberta, 28 cents.

Imports of mixed gas (natural and artificial) increased to 119,310 thousand cubic feet in 1926 from 63,614 thousand cubic feet in 1925.

The natural gas industry in Canada as represented by the companies operating in 1926 had a total capital investment of \$57,231,261. Ontario firms accounted for 54 per cent of this capital while the remainder was credited to Alberta and New Brunswick operators.

Employment was furnished to 1,254 salaried employees and wage-earners, whose combined earnings amounted to \$1,448,778. The average number of employees in Ontario was 860; in Alberta 340; and in New Brunswick, 54.

Coal, fuel oil, natural gas and electricity used in this industry cost \$40,444. Primary power in operation during the year consisted of 155 units rated at 1,566 h.p. Electric motors used numbered 27 with a rating of 326 h.p. Boilers employed totalled 22 units rated at 1,270 h.p.

## ONTARIO

The Annual Report for 1889 of the Mineral Statistics and Mines Branch of the Geological and Natural History Survey of Canada, gives the following information regarding the natural gas industry.

"Natural gas has been known to occur throughout Canada since the last century, though but little practical use was made of it till the year 1885. Numerous gas springs have been observed throughout Ontario, notably the "Gas Spring" at Caledonia Springs, Prescott county, and the "Burning Spring" at Niagara Falls, in Lincoln county; these two localities are historical, having been known at the beginning of the present century."

In July, 1885, a well was commenced at Port Colborne, Welland county, and the gas from this well was utilized in the following August. Two additional wells were sunk in Port Colborne at that time. Four wells were sunk in Collingwood during 1887 and 1888, from three of which gas was obtained. A productive well was also struck about this time at Delphi, five miles west of Collingwood.

In December, 1888, gas was discovered near Leamington, Essex County, and in 1889 another field was opened up in Welland county, about 25 miles west of Niagara Falls. Natural gas from these two fields was piped across the border to Detroit, Toledo and Buffalo. The export from the Essex field was discontinued in 1901, and in 1904 the production ceased. The eastern part of Niagara is still being supplied by the Welland field and the discovery well completed in 1889 continues to produce in paying quantities. Haldimand field was opened up in 1890; Tilbury was discovered in 1906; and Elgin in 1911. Smaller fields discovered in the province are: Hepworth field in 1900; Dawn field in 1911; and Dover field in 1917.

Conditions in the natural gas industry in Ontario during 1926 are summarized by Col. R. B. Harkness, Commissioner of Gas for Ontario, as follows:—

*Essex County.*—A new well was drilled on lot 7, con. Front Road, with an open flow of 75,000 cu. ft. and rock pressure, 345 lb.

*Kent County.*—The Southern Ontario Gas Company has been working westerly along the shore of Lake Erie from the Tilbury field, and got a very good well just beyond the known western extension of this field in Romney township. There has been the usual drilling in the old Tilbury field, fitting in a

well where the distance in between the wells permitted. In the Dover field the Union Natural Gas Company have drilled their twentieth well, lot 2, con. III, Dover West, a small gas well 600 M cubic feet, to the north of No. 13, which was the largest gas well in the field. They completed a well last fall some 200 or 300 yards northeast of No. 13: a dry hole. This field has been a great disappointment; it is a long narrow field, and the production is pretty spotted; there is still plenty of room for exploration and no reason why another field should not be discovered.

In Howard township the Union Natural Gas Company has been purchasing a supply of gas from farmers who have drilled wells in the surface drift, a most surprising gas field. One well had an open flow of over 3,000,000 cubic feet; the average initial rock pressure of the field was about 15 lb.; gas was found at about 120 feet. The gas was put directly into the Ridgetown low pressure system. It has supplied that town during the years 1924-1925—106,681 M cubic feet. There are about 50 more of these wells supplying gas to the owners for their houses only; they use a low average 200 M cubic feet each, a total of 10,000 additional per year.

*Lambton County.*—There have been quite a lot of shallow wells drilled in the north half of this county, and quite a number of small gas wells resulted, with two or three small oil wells. The location of these wells is near Aberarder and from there along the south shore of Lake Huron to the city of Sarnia. The deep test being drilled at Arkona is still incomplete; they no sooner got the well clear of obstruction than the lost their drilling tools again. They have been drilling here for nearly four years, and have not finished their well. There is no change in the situation elsewhere in Lambton county.

In Dawn township the Union Natural Gas Company has done some more drilling for gas, but although they have not succeeded in enlarging the field to any extent, they found two producing wells, one of which gave an excellent yield of gas.

*Norfolk County.*—The discovery of gas in Middleton Township field has been developed to the limits of the field; it is not as promising as it appeared to be at first; after the winter drain the rock pressure lowered over 50 per cent and the open flow about 60 per cent. It is apparently a very small field.

*Perth County.*—The well being drilled north of Mitchell, in Logan township, has been completed to the Precambrian: a dry hole.

*Brant County.*—A well has been drilled on lot 13, con. III, of Tuscarora; no gas or oil in commercial quantities was found in the Clinton or Medina-Cataract, and the test was carried to the Trenton: a dry hole.

*Wentworth County.*—Near the village of Alberton, in Ancaster township, on lot 20-21, con. IX, a well was located by means of a divining rod and the test carried to the Precambrian; only a trace of oil was found, and this in the Trenton limestone.

*Haldimand County.*—The usual number of wells have been drilled throughout this county, in the old gas fields; they number about 60 per year. The townships of Dunn and South Cayuga have given the best results. An area along the line between these townships is apparently isolated from the remainder of the field, and gives some very good results. One well had a flow of slightly over 1,000,000 cubic feet.

*York County.*—A dry hole to the Precambrian was drilled on lot 14, con. III, York township. A small gas well was completed on lot 64. con. I, Whitechurch township; a small flow of gas was found at about 400 feet in the Trenton. The Trenton here is remarkably thin, about 520 feet, and the surface very deep. The surface deposits were 570 feet thick.

*Peel County.*—A well was drilled on lot 17, con. I, Albion township; it penetrated the Trenton a short distance, when the hole was lost through the caving of the upper shales; the hole was full of water and it was not a good test.

## ALBERTA

The following quotation from a report by Charles C. Ross, supervisory engineer, Department of the Interior, Calgary, Alberta, gives a brief historical sketch of the developments in the natural gas industry in Alberta:—

"In 1885 the first natural gas discovered in southeastern Alberta was encountered in a well being drilled by the C.P.R. for water at Alderson, some thirty-five miles west and north of Medicine Hat.

In 1890, while prospecting for coal, a well was drilled within the city limits of Medicine Hat, and a flow of gas was encountered at 650 feet. The surface water was not cased off and as the gas pressure accumulated, the hole developed into a water geyser. The top of the well was plugged and is now covered by a spur track of the C.P.R.

This shallow production enthused the citizens of Medicine Hat to such an extent that enough money was subscribed and a small drilling machine being loaned by the C.P.R., a well was drilled and properly cased. A good flow of gas was obtained at 650 feet, with 235 pounds per square inch pressure, which resulted in eight wells being drilled to this producing sand. All have now been abandoned, with the exception of one, which is still producing.

The gas horizon known as the Medicine Hat gas-sand was penetrated for the first time in May, 1904 at a depth of 1,010 feet. The closed pressure was reported at 645 pounds per square inch, and the open flow at 2,225,000 cubic feet per day.

Since 1904 twenty-eight wells have been drilled, 17 by the city of Medicine Hat and the remainder by various industrial concerns. In addition, 9 wells were drilled by the industrial companies at Redcliff, four miles to the northwest, on the same structure."

The Canadian Pacific Railway drilled the first well in the Bow Island field in 1908, the development of this field has since been carried on by the Canadian Western Natural Gas, Light, Heat and Power Company, Limited.

The principal producing fields in Alberta, during 1926, were the Medicine Hat; Bow Island (about 40 miles west of Medicine Hat); Viking field (about 80 miles southeast of Edmonton); the Foremost field (about 6 miles south and west of the town of Foremost); and the Turner Valley field (about 35 miles southwest of Calgary). Natural gas was piped into Wainwright during 1926 from the Maple Leaf well in the Fabyan field. This field is approximately 8 miles west of the Wainwright Battle River oil field and 150 miles southeast of Edmonton. A small production was also obtained from wells in the Wainwright Battle River oil field.

The lure of cheap fuel has proved of great importance to certain western cities; in Medicine Hat, large industrial firms use natural gas for fuel. Three flour mills, the city power house (in which gas is used in boiler plants), 2 clay products plants and several foundries are the largest industrial consumers of this product. Redcliff, 2 miles west of Medicine Hat has 6 wells; the industrial users of this gas are the Dominion Glass Company and 3 clay products plants. Calgary and Edmonton, the largest cities in the province, are being supplied with natural gas. In Calgary there are over 12,000 domestic and 10 industrial consumers; in Edmonton, more than 6,500 domestic and 215 industrial users. Lethbridge and Wetaskiwin, and many other towns are also being served by natural gas. In addition, many drilling companies in the province make use of this fuel in their operations.

#### NEW BRUNSWICK

Drilling for oil in New Brunswick in 1859 was rewarded by the discovery of natural gas. A résumé of the development of petroleum and natural gas industry in New Brunswick is given in this report under the section on "Petroleum."

**Table 413.—Principal Statistics in the Natural Gas Industry in Canada, 1922-1926**

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Fuel and electricity	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$	\$
1922.....	132	1,981	31,373,817	921	939,194	(a)	1,458,675	5,846,501
1923.....	192	2,060	38,722,854	867	1,050,366	(a)	1,789,097	5,884,618
1924.....	186	2,031	50,561,757	1,240	1,315,405	2,250	(a)	5,708,636
1925.....	161	2,236	48,895,802	1,059	1,206,875	13,396	(a)	6,833,005
1926.....	169	2,255	57,231,261	1,254	1,448,778	40,444	(a)	7,557,174

(a) Data not available.

Table 414.—Production of Natural Gas in Canada, by Provinces, 1892-1926

Year	New Brunswick		Ontario		Manitoba		Alberta		Canada	
	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value	M cu. ft.	Value
		\$		\$		\$		\$		\$
1892.....				150,000						150,000
1893.....				376,233						376,233
1894.....				313,754						313,754
1895.....				423,032						423,032
1896.....				276,301						276,301
1897.....				325,873						325,873
1898.....				322,123						322,123
1899.....				387,271						387,271
1900.....				417,094						417,094
1901.....				339,476						339,476
1902.....				195,992						195,992
1903.....				196,535				5,675		202,210
1904.....				253,524				74,852		328,376
1905.....				316,476				63,085		379,561
1906.....				533,446				50,077		583,523
1907.....				746,499				68,533		815,032
1908.....				949,297				63,363		1,012,660
1909.....				1,145,307				61,722		1,207,029
1910.....				1,271,303				75,168		1,346,471
1911.....				1,807,513				110,165		1,917,678
1912.....		36,549		2,036,245				289,906		2,326,700
1913.....	828,603	174,147	12,474,745	2,055,768			7,174,490	1,079,466	20,477,838	3,309,381
1914.....	425,826	54,249	14,094,521	2,215,808			7,172,157	1,214,670	21,692,504	3,484,727
1915.....	430,692	60,383	15,211,523	2,622,838			4,481,947	1,022,814	20,124,162	3,706,035
1916.....	610,118	79,628	17,953,109	2,765,105			6,904,231	1,113,296	25,467,458	3,958,029
1917.....	796,775	103,735	19,868,035	3,641,587			6,744,130	1,299,976	27,408,940	5,045,298
1918.....	792,396	107,842	13,029,524	2,884,460			6,318,389	1,358,638	20,140,309	4,350,940
1919.....	682,890	120,510	11,024,041	2,690,400			8,230,838	1,365,127	19,937,769	4,176,037
1920.....	682,502	130,506	10,529,374	2,920,731	200	60	5,633,442	1,181,345	16,845,518	4,232,642
1921.....	708,743	139,375	8,422,774	3,080,130	200	60	4,945,884	1,374,599	14,077,601	4,594,164
1922.....	753,898	148,040	8,060,114	4,076,296	200	60	5,868,439	1,622,105	14,682,651	5,846,501
1923.....	640,300	126,068	8,128,413	4,066,244	200	60	7,191,670	1,692,246	15,960,583	5,884,618
1924.....	599,972	113,577	7,150,078	3,798,381	200	60	7,131,086	1,796,618	14,881,336	5,708,636
1925.....	639,235	122,394	7,143,962	3,958,006	200	60	9,119,500	2,752,545	16,902,897	6,833,005
1926.....	648,316	128,300	7,764,996	4,409,593	200	60	10,794,697	3,019,221	19,298,209	7,557,174
<b>Total....</b>	<b>*9,240,266</b>	<b>1,645,303</b>	<b>*160,855,209</b>	<b>57,968,641</b>	<b>1,400</b>	<b>420</b>	<b>*97,710,900</b>	<b>22,755,212</b>	<b>*267,807,775</b>	<b>82,369,576</b>

\* Total quantity produced, 1913 to 1926.

Table 415.—Capital Employed in the Natural Gas Industry in Canada by Provinces, 1925 and 1926

	1925				1926			
	New Brunswick	Ontario	Alberta	Canada	New Brunswick and Prince Edward I	Ontario	Alberta	Canada
	\$	\$	\$	\$	\$	\$	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>								
Cost of lands, buildings, plant, machinery and tools.....		22,539,124	18,709,542	41,248,666		24,120,999	22,489,214	46,610,213
Cost of all supplies and stocks on hand.....		467,725	515,382	983,107		489,206	430,437	919,643
Cash, trading and operating accounts and bills receivable.....		3,104,538	3,293,491	6,398,029		5,890,669	3,190,735	9,081,404
<b>Total.....</b>	<b>266,000</b>	<b>26,111,387</b>	<b>22,518,415</b>	<b>*48,895,802</b>	<b>620,001</b>	<b>30,500,874</b>	<b>26,110,386</b>	<b>†57,231,261</b>

\* Includes data for New Brunswick.

† Includes data for New Brunswick and Prince Edward Island.

Table 416.—Number of Gas Wells in Canada, by Provinces, 1925 and 1926

		New Brunswick	Ontario	Manitoba	Alberta	Canada
Productive wells at beginning of year.....	1925	26	1,934	1	70	2,031
	1926	32	2,117	1	86	2,236
Number of productive wells drilled.....	1925	6	75		5	86
	1926	3	86		3	92
Number of dry wells drilled.....	1925		22		1	23
	1926	1	35		1	37
Number of wells abandoned.....	1925		176		3	179
	1926		78		1	79
Productive wells at end of year.....	1925	32	2,117	1	86	2,236
	1926	35	2,126	2	84	2,247

Table 417.—Natural Gas Wells in Ontario, by Townships, 1926

Township	No. of producing wells in operation Dec. 31, 1926	No. of wells abandoned this year	No. of dry wells drilled this year	No. of producing wells drilled this year
Amabel.....	2			
Ancaster.....			1	
Bayham.....	42	1		
Bertie.....	89	3		1
Binbrook.....	46	3		1
Brantford.....			1	1
Caledon E.....	3			
Caistor.....	36		1	1
Canboro.....	136	7	1	
Cayuga, North.....	80	6	3	17
Cayuga, South.....	58	5		6
Charlotteville.....	16			
Crowland.....	49	2		2
Dawn.....	6		2	1
Dorchester, North.....	3			
Dover, West.....	7			1
Dunn.....	20	1	3	7
Enniskillen.....	3			
Euphemia.....	6			
Gainsboro.....	2	1	2	
Glanford.....	21	3		
Gosfield.....	14			4
Houghton.....	3		1	
Humberstone.....	94	2		
Logan.....			1	
Mersea.....	3			
Middleton.....	27	5	4	3
Malahide.....	2			
Moulton.....	103	6		
Oneida.....	25	3		
Onondaga.....	30	1		1
Rainham.....	109	5	2	17
Raleigh.....	15	3		
Romney.....	105	2		5
Sarnia.....	19			
Seneca.....	129	7		
Sherbrooke.....	13	1		
Tilbury, East.....	135	2		2
Townsend.....	1		1	
Tuscarara.....				
Wainfleet.....	41	1		
Walpole.....	154	1	1	9
Walsingham, North.....	5	2	1	
Walsingham, South.....	15			2
Windham.....	36			
Willoughby.....	36		2	1
Woodhouse.....	50	5	2	1
Private wells.....	300			5
Surface wells.....	69		8	
<b>Total.....</b>	<b>2,126</b>	<b>78</b>	<b>35</b>	<b>86</b>

Table 418.—Employees, Salaries and Wages in the Natural Gas Industry in Canada, by Provinces, 1925 and 1926

Province	Average number of employees				Salaries and wages		
	Salaried employees		Wage- earners	Total	Salaries	Wages	Total
	Male	Female					
1925					\$	\$	\$
New Brunswick.....	4	2	23	29	14,881	32,576	47,457
Ontario.....	249	62	381	692	306,481	319,345	625,826
Alberta.....	74	18	246	338	176,379	357,213	533,592
Canada.....	327	82	650	1,059	497,741	709,134	1,206,875
1926							
New Brunswick and Prince Edward Island...	6	3	45	54	31,888	59,240	91,128
Ontario.....	330	76	454	860	455,271	387,034	842,305
Alberta.....	72	20	248	340	187,652	327,693	515,345
Canada.....	408	99	747	1,254	674,811	773,967	1,448,778

Table 419.—Wage-Earners in the Natural Gas Industry in Canada, by Months and by Provinces, 1926

Month	New Brunswick and Prince Edward Island	Ontario	Alberta	Canada
January.....	31	320	156	507
February.....	28	326	153	507
March.....	27	332	155	514
April.....	39	360	205	604
May.....	46	499	272	817
June.....	49	493	316	858
July.....	49	507	331	887
August.....	63	524	311	898
September.....	60	522	280	862
October.....	47	549	296	892
November.....	36	463	228	727
December.....	22	441	233	696

Table 420.—Fuel and Electricity Used in the Natural Gas Industry in Canada, 1925 and 1926

Kind	1925		1926	
	Quantity	Value	Quantity	Value
Bituminous coal.....short tons	4	25	2,508	23,403
Fuel oil.....imp. gal.			84,665	5,443
Gas.....M. cu. ft.	27,298	11,222	101,020	9,614
Electric power.....k.w.h.	79,930	2,149	77,215	2,084
Total.....		13,396		40,444

Table 421.—Power Equipment Employed in the Natural Gas Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	13	424	13	419
Internal combustion engines.....	138	1,084	142	1,147
<i>Total primary power.....</i>	<i>151</i>	<i>1,508</i>	<i>155</i>	<i>1,566</i>
Electric motors run by purchased power.....	9	43	6	96
<b>Total power equipment employed.....</b>	<b>160</b>	<b>1,551</b>	<b>161</b>	<b>1,662</b>
Electric motors run by primary power in same plant.....	16	227	21	230
<i>Total electric motors.....</i>	<i>25</i>	<i>270</i>	<i>27</i>	<i>326</i>
Boilers.....	18	942	22	1,270

## THE PEAT INDUSTRY IN CANADA

The Grand Trunk Railway experimented with peat in 1866 making use of the condensed product produced by the Hodges process at Bulstrode, Quebec. During the same year, peat was used by the Caledonia Iron Works at Montreal in the smelting of iron. Geological Survey reports show that in 1869 the production of peat amounted to 14,000 tons; in the following year 16,000 tons were produced; and in 1871, the output was 10,300 tons. During 1900 shipments were recorded at 400 tons with a value of \$3 per ton. In 1920, when 4,550 tons averaging \$4.10 per ton were shipped, two bogs were in operation, one in Bruce county and the other at Alfred, Ontario. The Alfred bog was operated in 1925 by the Peat Fuels, Limited, using the air-dried machine process developed by the Ontario-Federal Committee. Sales during that year amounted to 1,370 tons valued at \$8,394. No operations were carried on in this industry in 1926.

Table 422.—Production of Peat in Canada, 1900-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1900.....	400	1,200	1908.....	60	180	1916.....	300	1,500
1901.....	220	600	1909.....	60	240	1917-18.....		
1902.....	475	1,663	1910.....	841	2,604	1919.....	986	6,561
1903.....	1,100	3,300	1911.....	1,463	3,817	1920.....	4,550	18,650
1904.....	800	2,400	1912.....	700	2,900	1921.....	1,666	6,664
1905.....	80	260	1913.....	2,600	10,100	1922.....	3,000	14,500
1906.....	474	1,422	1914.....	685	2,470	1923-24.....		
1907.....	50	200	1915.....	300	1,050	1925.....	1,370	8,394
						1926.....		
						<b>Total.....</b>	<b>22,180</b>	<b>90,675</b>

## THE PETROLEUM INDUSTRY IN CANADA

(Including (1) Production of Crude Petroleum; and (2) Petroleum Refining)

## 1. Production of Crude Petroleum

## CANADA

Crude petroleum was first obtained in Canada in 1858, when a shallow well was dug near Oil Springs, Ontario. This was the first productive oil well on the American continent. The first recorded production was for the year 1881, when 368,987 barrels were produced. A maximum production of 829,104 barrels was reached in 1895, however, from that year there has been a considerable annual variation until a minimum of 160,773 barrels was produced in 1924. The production of crude naphtha in Alberta in 1925 and 1926 increased the totals for these years very materially.

On December 31, 1926, there were 2,785 wells in operation in Canada, as compared with 2,885 active wells at the close of the previous year.

Crude petroleum production in Canada during 1926 showed an encouraging increase over the total for the preceding year. The year's production amounted to 364,444 barrels valued at \$1,311,665; in 1925 the total was 332,001 barrels worth \$1,250,705. Alberta's production, mainly from the Royalite No. 4 wet-gas well, topped the high mark of 1925, reaching a new record of 216,050 barrels. A decline was shown in the Ontario production for the year when 137,850 barrels were produced. Another feature of considerable worth was the proportionately large increase in the New Brunswick production, the 1926 figures being 10,544 barrels as against 5,376 barrels in the preceding year.

Petroleum and its products imported into Canada during 1926 were valued at \$52,063,686, an increase of \$8,221,259 over the 1925 import value of \$43,842,427.

Capital employed in the crude petroleum industry in Canada during 1926, as reported by the 210 operating companies was \$17,639,142. Employment statistics showed 90 salaried employees and 544 wage-earners whose earnings totalled \$788,843.

Fuel and electricity used during 1926 was valued at \$77,902. Included in this amount was \$23,431 paid for 956,006 thousand cubic feet of natural gas and \$21,936 for 1,899,769 kilowatt hours of electricity. Primary power in use during the year consisted of 96 units rated at 2,777 h.p. Electric motors employed numbered 69 with a rating of 567 h.p. and boilers in use totalled 49 units rated at 2,562 h.p.

*Bounties.*—With a view to encouraging the production of oil from Canadian wells, the Dominion Government passed an Act in 1904 providing for "the payment of a bounty of 1½ cents per imperial gallon on all crude petroleum produced from wells in Canada on and after the eighth day of June, 1904—said bounty to be paid to the producer of the petroleum."

In 1907, the Act was amended by the addition of the words "or to such other persons interested, as the Governor-in-Council by regulation approves."

In 1908, the payment of bounties was limited by defining the oil on which payment of bounty might be made as that "having a specific gravity of not less than 0.8325 at 60° Fahrenheit produced from wells in Canada or from shales or other substances mined in Canada on or after the date on which this Act goes into force—the said bounty to be paid to the producer of the petroleum or to such other person interested as the Governor-in-Council by regulation approves."

In 1909, a further modification in the wording of the Act in respect to persons to whom bounty should be paid was made as follows: "The said bounty to be paid to or divided amongst the producers of the petroleum, the owner or occupier of the soil through which it is mined or won or such other person interested or injuriously affected by the mining operations or works as the Governor-in-Council by regulation approves."

A further limitation, this time in the amount of bounty payment, was made on June 30th, 1923, in which the following periods and rates of payments were established:

"The said bounty shall be paid during the periods and at the rates following, that is to say:

"On such crude petroleum produced on or before the thirtieth day of June, one thousand nine hundred and twenty-four, a bounty of one and one-half cents per imperial gallon shall be paid;

"On such crude petroleum produced on or after the first day of July, one thousand nine hundred and twenty-four, and not later than the thirtieth day of June, one thousand nine hundred and twenty-five, a bounty of three-quarters of one per cent per imperial gallon shall be paid;

"On such crude petroleum produced on and after the first day of July, one thousand nine hundred and twenty-five, no bounty shall be paid."

As a result of the foregoing regulations, the payment of bounty was discontinued on July 1st, 1925.

*Imports.*—Very large quantities of crude petroleum are imported into Canada every year for various purposes, but chiefly to provide the necessary raw materials for the several petroleum refineries throughout the Dominion. It is probable that three-quarters of the total cost of crude petroleum imported into Canada is spent for crude oil that is subsequently refined in Canada.

A glance at the statistics of petroleum importations into Canada since 1880 reveals a wonderful development in this branch of foreign trade. In 1880, the value of petroleum products brought into Canada was \$221,143, and of this sum \$213,320 was spent for United States oils. Twenty years later, in 1900, the value of oil importations for the first time rose above the one-million dollar mark. Five years later, in 1905, imports were valued at \$2,481,072, and still nearly all the oil brought into Canada was obtained from United States sources. In 1910, imports were valued at almost double the sum paid out in 1905, and in that year for the first time relatively small amounts of oil were obtained from Mexico. In the next sixteen years, from 1910-1926, the imports of oil grew enormously, due largely to the development of the automobile industry. In 1926, Canada's imports of petroleum products reached a grand total value of \$52,508,042. The contrast between this value and \$221,143, representing imports in 1880, emphasizes the tremendous development of the petroleum industry in America.

While Canada still buys most of the imported oil from the United States, there has been a change in the foreign trade, due to the development of imports from Mexico and Peru. Whereas, in 1910, the value of oil imported from Mexico was only \$60,237, imports in 1920 were valued at \$1,560,611, and in 1925 and 1926 the value of petroleum products obtained from Mexico was maintained at about the same sum as in 1920. Canada's imports from Peru, first noted in 1915 when \$86,521 represented the value of the imports from this source, have grown appreciably until, in 1920, the value stood at \$1,982,550; in 1925, at \$2,532,828; and in 1926, at \$5,558,895.

*Exports.*—Canada has not yet been able to produce a sufficient supply of crude petroleum to permit the export of oil to other countries, so the foreign trade in petroleum is largely a matter of import trade into Canada. There are, however, some international dealings between the western United States and Canada's western provinces that are of interest. Crude oil imported from the Montana field has been treated in Alberta's refineries for the recovery of gasoline that finds a ready market for the operation of automobiles and tractors on the prairies. There is less market in the Canadian west for the fuel-oil fraction, and, as a result, it has been the practice to export quantities of this oil to points in the western States, where it finds a ready sale.

Canada's exports of gasoline have grown in the past six years from 164,433 gallons in 1920 to 3,867,536 gallons in 1926. The United States and Newfoundland are Canada's principal customers in this respect, but small shipments are also made to a number of other countries. In the import classification there is an item of "Oil, coal and kerosene, crude," representing a considerable volume of trade, amounting to more than 21 million gallons in 1926; it is understood that this item represents the exports of fuel oil previously noted. There has been a fairly consistent export of coal oil or kerosene during the past seven years; most of the export trade in this commodity being to the neighbouring country of Newfoundland.

#### PRINCE EDWARD ISLAND

Drilling operations were in progress on Governor's Island, Prince Edward Island, during 1926. A well was drilled to a depth of 4,127 feet, when operations were suspended until weather conditions became more favourable.

## NOVA SCOTIA

Operations in Nova Scotia during 1926 consisted mainly of drilling in the vicinity of southwest Mabou for the purpose of working out the geological formation in this district.

## NEW BRUNSWICK

Interest in the oil seepages from the Albert shales in Albert and Westmoreland counties became more than local in 1859 and several United States oil men were aroused to the possibility of obtaining oil in these districts. Four wells were drilled to a depth of approximately 190 feet, near Dover and one at St. Joseph, Westmoreland county. Although flows of gas and small quantities of oil were obtained, the seeping in of water ruined these wells. Further drilling was carried on at these locations in 1879 and seven wells were sunk, but because of many difficulties and also due to the low price for petroleum these wells were abandoned. Intensive drilling was commenced about 1900 and continued until 1906; in all a total of 72 wells were drilled in Dover and St. Joseph districts, 1 in Kent county and 4 in Albert county; 17 petroleum wells were in operation in the Stony Creek field on December 31, 1926.

Production in New Brunswick was first recorded in 1910, when 1,485 barrels were produced. Variations between 1,000 and 2,000 barrels were registered during the period 1910 to 1917. A gradual increase in production was noted during the following years and in 1923, an output of 8,826 barrels was reached. The succeeding two years showed a considerable falling off, but, in 1926 the maximum production for this province was reached, namely, 10,544 barrels.

## ONTARIO

In 1858, the first oil well on the North American continent was dug to a depth of 100 feet at Oil Springs, Ontario. Drake's well in Pennsylvania was not dug until the following year. Early in 1862, a pioneer oil prospector brought in the first flowing well at Oil Springs, Ontario, and before the fall of the same year there were approximately 35 producing wells in operation. According to available information some of these wells produced from 3,000 to 6,000 barrels per day.

In 1865, Petrolia came into existence as a large producer and since that date has maintained its position among the leading oil-fields in Canada. Prior to this discovery, oil deposits were located in Kent county, at Bothwell. Although Petrolia, Oil Springs and Bothwell are by far the oldest producing fields in Canada, these three fields continue to rank as the premier producers in the province. An outstanding feature of the industry in Ontario took place in 1923 when a well was brought in, in Romney township on the shore of Lake Erie. The 1924 production from this well was 3,000 barrels. The importance of this well is that it lies in the Trenton and production from the Trenton has made the neighbouring state of Ohio one of the largest producers of petroleum and natural gas. In 1925, however, this deep Trenton production in the Dover and Romney fields was lost as the flow of oil was shut off with a plug. The companies owning these wells decided that the gas production from them was of more value to their customers, therefore, this step was taken.

Petroleum wells in operation in the province in 1926 numbered 2,758 as compared with 2,862 wells operating in the previous year. Productive wells drilled during the year under review totalled 11 and 165 wells were abandoned.

Col. R. B. Harkness, Commissioner of Gas for Ontario, reviews the developments in the petroleum industry in Ontario during 1926 as follows:—

The conditions in the oil fields of Ontario are about the same as in past years. Wells continue to pump a few gallons daily so long as the casing withstands the spring freshets. This spring flood water takes its annual toll of wells, by collapsing the casing which has become too thin, through corrosion, to withstand the strain. Wells which do not produce a sufficient revenue to make it profitable to replace this casing with new material, or any available second-hand material, are abandoned. In this manner the oil fields of Ontario are gradually passing into history.

In Zone township the deep test at Thamesville, lot 5, con. III, was finished to the Precambrian with no flow; the well is abandoned. Oil and gas occurred at the base of the sediments. In the easterly part of the same lot, and just over into the northern portion of lot 4, an extension of the old shallow oil

field has been found; some of the wells have been pumping 10 barrels for several months. The old Klondike field in lot 6, con. I, has been revived; one well has been producing 10 barrels of oil steadily, since the accumulation of water has been pumped off. A small extension of the field, in a northwesterly direction, has been found by drilling. In lot 5, con. XIII, Gore of Camden, a small flow of gas and some oil was found in 1926, but the operators did not consider it worthy of any further expenditure. During the past month, however, a well was drilled near the northern boundary of lot 5, which had a production of 12 barrels per hour. A second well has been drilled that appears to be quite as good, and a well drilled in 1926 has the appearance of being quite as good as either one of these, but requires a larger pump to get the best results. It looks very much as if they are going to find a pool of oil in that vicinity, but no estimate can be made of the extent of the field at the present time.

#### SASKATCHEWAN

Operations in the search for oil in Saskatchewan were conducted by 4 companies during 1926. The Unity Valley, near Vera, the Simpson field, the Riverhurst field, and the Rush Lake field were the centres of activity.

#### ALBERTA

Alberta's contribution to the petroleum output of Canada really began in 1917, although small quantities had been produced during each of the previous four years. In 1915 there were only 12 drills working in Alberta in the search for oil. The following explanation for this situation is advanced in a report by S. E. Slipper of the Federal Geological Survey:—

"Reaction from the wild speculation of 1914, the financial conditions caused by the war and the generally unsatisfactory results obtained thus far, are the causes for the decrease in activity and the waning of public interest."

The search for oil was continued in Alberta during 1916 and 20 standard drilling rigs were in operation. Maximum production for the early years of Alberta's oil output was reached in 1919, when 16,437 barrels were produced. A gradual decline was recorded until in 1924 only 844 barrels were taken from the wells. Then, with the bringing in of the famous Royalite No. 4 well, the output of the province rose sharply in 1925 and production in 1926 reached the grand total of 216,050 barrels.

The oil industry in Alberta has been reviewed by C. C. Ross, Supervisory Engineer of the Northwest Territories and Yukon Branch, Department of the Interior, as follows:—

"The interest aroused by the sensational bringing in of the Royalite No. 4 Well in Turner Valley has recently been stimulated by the striking of similar high pressure gas containing high-grade gasoline in three other wells in the vicinity, viz: McLeod No. 2, Illinois-Alberta No. 1 and Vulcan No. 1. These wells outline roughly a triangle of which Royalite No. 4 forms the apex and the other three an irregular base, the distance of each from Royalite No. 4 being respectively 3,500 feet, 3,800 feet and 6,600 feet.

The three new wells all give in the region of seven to eight million cubic feet a day and a yield of 140 barrels of 72°-73° naphtha a day.

The Royalite No. 4 well began producing from the limestone at a depth of 3,740 feet on the 24th of October, 1924, when the flow of wet gas was measured at 21,500,000 cubic feet per day. Owing to the high pressure and the damaged state of the well it has not since been measured but continues to give a flow showing little sign of diminution against a back pressure of from 500 to 1,200 pounds; the naphtha recovered averaged 430 barrels per day during 1925 and increased to 531 barrels in 1926.

A number of wells are now being drilled in and around Turner Valley and it is to be expected that the extent of the wet gas resources in the Royalite limestone will be much further blocked out before long. Most operators are desirous of attaining to the limestone rather than of utilizing the upper horizons, although in the past these have produced a very valuable grade of oil, 54°-57° B<sub>é</sub>. The upper horizons can be cased off until a later date without loss. At present only one well—McLeod No. 1—is regularly producing from the upper horizon; there the yield is 20 barrels a day from the Dakota formation at a depth of 2,397 feet."

Mr. Ross further describes some of the more important areas, and discusses their respective possibilities as follows:—

**Turner Valley.**—At the end of 1926 the wells drilling and nearing completion in this area totalled 22 rigs, of these 16 were spudded in during the year. This impetus to prospecting operations was no doubt solely due to the fact that Royalite No. 4, contrary to all expectations, still maintained, at the beginning of the year, after fifteen months uninterrupted flow, a gas pressure fluctuating in the neighbourhood of 700 pounds per square inch and delivering daily between 17 and 18 million cubic feet of wet gas from which were extracted increasing quantities of high grade naphtha. Up to the end of 1925 the quantity of the latter extracted amounted to 156,766 barrels; during 1926 the extraction figures, although showing slight variations from month to month, showed that this well was still holding up in a manner unprecedented on any of the known oil or gas fields of the world, the total naphtha extraction figures for 1926 being 194,127 barrels.

The naphtha has a high market value—\$4.72½ per barrel. The return from this one well was phenomenal—approximating close on one million dollars—the effect on the local investing public was instantaneous and increased efforts were at once made to complete the wells in drilling at the commencement of 1926. Also many new companies were formed to operate in this and other areas in Alberta. In the Turner valley alone sixteen wells were started during the year and a total of 42,779 feet of drilling work was accomplished in these wells and exclusive of the amount drilled in wells which had been started prior to 1926.

During the year the only completed wells were the Vulcan No. 1, (5005 ft.) and Illinois-Alberta No. 1, (3831 ft.)

At the McLeod No. 2 well a heavy flow of gas was encountered in August at 3,620 feet. Other flows were met increasing in quantity with depth until a maximum of ten million cubic feet was encountered at 3,770 feet where, unfortunately, a drilling bit was lost. Efforts to recover the latter have been continued to date without entire success, but immediately this is accomplished the well can be coupled up to the separator and will add another to the list of producing wells in the area.

Several of the new wells, commenced during 1926, are now at considerable depth and nearing the limestone and within a short period further wells should be in the producing list and add considerably to the amount of naphtha produced. In the majority of these wells the shallow oil horizon has been met at depths ranging between 2,200 feet and 2,400 feet, but in no case has any attempt been made to develop this zone, although it is probable that wells drilled to this horizon would prove very remunerative owing to the initial low cost for drilling and the high market value which the oil can command. At present operators are all tempted to drill for the Royalite limestone.

Outside of the Turner Valley area all prospecting wells have been drilled (without any connected method) and in the majority of cases at points remote from one another. A brief summary of these operations follows:—

**Rice Creek.**—About thirty miles west of Nanton a well was drilled by the Imperial Oil Company to a depth of 5,747 feet where operations were suspended until spring.

**Highwood Area.**—About twenty miles west of the town of High River the Imperial Oil Company is drilling a well at a depth of 1,780 feet.

**Bragg Creek, Moose Mountain, Jumping Pound and Bow River Areas.**—During 1926 several wells were resumed and some started at different points in these areas, but none have yet reached a conclusive depth. In several, slight oil and gas indications were met which may, if followed up, lead to the discovery of productive areas.

**Wainwright.**—During the period under review only three new wells were started in this field, but none have yet been completed. An official test for production of the British Petroleum, Limited, Well No. 3B, was carried out during November, the test over a period of three days showed a production of clean oil amounting to 3.8 barrels per hour.

**Ribstone.**—This is an area which has attracted a great deal of attention during 1926, and already three wells are being drilled. Up to date only one of these has been drilled to a depth where results may be expected; this is the Imperial Oils Ribstone No. 1 test which met a good show of heavy asphaltic oil at 1,900 feet; this, however, has been cased off and drilling is proceeding to test deeper strata. The indication is encouraging and proves the possibility of this heavy oil being found in remunerative quantities somewhere in the neighbourhood.

Outside of Alberta, very little prospect drilling was done in 1926, and that only of a desultory kind and at points widely separated.

**Conclusions.**—From present indications it is evident a great deal of new prospecting and development work will be started during the coming season, and if this is efficiently carried out many interesting developments are to be expected which may lead to the discovery of more productive oil and gas areas.

Table 423.—Principal Statistics of the Petroleum Industry in Canada, 1922-1926

Year	Number of firms	Number of wells	Capital employed	Number of employees	Salaries and wages	Fuel and electricity	Miscellaneous expenses	Selling value of products
			\$		\$	\$	\$	\$
1922.....	120	2,880	2,764,099	160	167,176	(a)	116,878	611,176
1923.....	117	2,694	2,934,213	151	118,231	(a)	79,019	522,018
1924.....	119	2,473	5,650,086	158	152,957	(a)	(a)	467,400
1925.....	180	2,885	7,954,722	259	318,101	20,990	(a)	1,250,705
1926.....	210	2,822	17,639,142	634	788,843	77,902	(a)	1,311,665

(a) Data not available.

Table 424.—Production of Crude Petroleum in Canada by Provinces, 1881-1926

(Barrel = 35 Imp. gal.)

	New Brunswick		Ontario		Alberta		Canada	
	Barrels	Value	Barrels	Value	Barrels	Value	Barrels	Value
		\$		\$		\$		\$
1881.....			368,987				368,987	
1882.....			389,573				389,573	
1883.....			472,866				472,866	
1884.....			571,000				571,000	
1885.....			587,563				587,563	
1886.....			584,061	525,655			584,061	525,655
1887.....			713,728	556,708			713,728	556,708
1888.....			695,203	713,695			695,203	713,695
1889.....			704,690	653,600			704,690	653,600
1890.....			795,030	902,734			795,030	902,734
1891.....			755,298	1,010,211			755,298	1,010,211
1892.....			779,753	984,438			779,753	984,438
1893.....			798,406	874,255			798,406	874,255
1894.....			829,104	835,322			829,104	835,322
1895.....			726,138	1,086,738			726,138	1,086,738
1896.....			726,822	1,155,647			726,822	1,155,647
1897.....			709,857	1,011,546			709,857	1,011,546
1898.....			758,391	1,061,747			758,391	1,061,747
1899.....			808,570	1,202,020			808,570	1,202,020
1900.....			710,498	1,151,007			710,498	1,151,007
1901.....			622,392	1,008,275			622,392	1,008,275
1902.....			530,624	951,190			530,624	951,190
1903.....			486,637	1,048,874			486,637	1,048,874
1904.....			503,474	935,895			503,474	935,895
1905.....			634,095	856,028			634,095	856,028
1906.....			569,753	761,760			569,753	761,760
1907.....			788,872	1,057,088			788,872	1,057,088
1908.....			527,987	747,102			527,987	747,102
1909.....			420,755	559,604			420,755	559,604
1910.....	1,485	1,826	314,410	386,724			315,895	388,550
1911.....	2,461	3,019	288,631	354,054			291,092	357,073
1912.....	2,679	3,799	240,657	341,251			243,336	345,050
1913.....	2,111	3,762	225,969	402,677			228,080	406,439
1914.....	1,725	2,742	212,693	338,182	387	2,200	214,805	343,124
1915.....	1,020	1,423	214,444	299,149		†	215,464	300,572
1916.....	1,345	2,663	196,778	389,621		†	198,123	392,284
1917.....	2,341	5,460	202,991	473,477	8,500	63,302	213,532	542,239
1918.....	3,009	7,402	288,692	777,737	13,040	100,004	304,741	885,143
1919.....	4,225	13,141	219,804	625,342	16,437	97,841	240,466	736,324
1920.....	5,148	19,963	180,071	726,286	11,032	75,986	196,251	822,235
1921.....	7,479	33,022	172,859	559,198	7,203	49,313	187,541	641,533
1922.....	7,778	32,732	164,731	526,316	6,559	52,128	179,068	611,176
1923.....	8,826	35,642	159,400	478,149	1,943	8,227	170,169	522,018
1924.....	5,561	21,313	154,368	441,952	844	4,135	160,773	467,400
1925.....	5,376	18,756	143,134	386,555	183,491	845,394	332,001	1,250,705
1926.....	10,544	29,940	137,850	379,221	216,050	902,504	364,444	1,311,665
<b>Total.....</b>	<b>73,113</b>	<b>236,605</b>	<b>22,087,609</b>	<b>*29,537,030</b>	<b>465,486</b>	<b>2,201,034</b>	<b>22,626,208</b>	<b>*31,974,669</b>

\* Total value from 1886 to 1926.

† Small production—no record.

Table 425.—Production of Crude Petroleum in Canada by Provinces, 1925 and 1926

Province	1925			1926		
	Barrels	Value less bounty	Bounty paid	Total value	Barrels	Total value
	\$	\$	\$	\$	\$	\$
New BRUNSWICK.....	5,376	16,805	1,951	18,756	10,544	29,940
ONTARIO—						
Petrolia and Enniskillen.....	52,481	133,301	7,923	141,224	56,170	153,428
Oil Springs.....	39,137	102,148	5,627	107,775	38,350	107,438
Moore Township.....	8,195	20,815	576	21,391	2,438	6,659
Sarnia Township.....	1,905	4,839	379	5,218	1,890	5,163
Plympton Township.....	1,424	3,617	184	3,801	1,047	2,860
Bothwell.....	26,243	66,657	3,680	70,337	25,382	69,331
West Dover.....	1,820	4,766	399	5,165	959	2,619
Raleigh Township.....	887	2,253	156	2,409	676	1,846
Dutton.....	146	381	38	419		
Onondaga.....	81	210	9	219	555	1,516
Moza Township.....	8,397	21,328	1,181	22,509	7,868	21,491
Thamesville.....	289	734		734	2,376	6,490
Dunwich.....	855	2,172		2,172	139	380
Romney Township.....	1,235	3,076		3,076		
Euphemia.....	39	106		106		
Total for Ontario.....	143,134	366,403	20,152	386,555	137,850	379,221
ALBERTA.....	183,491	845,394		845,394	216,050	902,504
Canada.....	332,001	1,228,602	22,103	1,250,705	364,444	1,311,665

Table 426.—Petroleum Wells in Canada, by Provinces, 1925 and 1926

		New Brunswick	Ontario	Alberta	Canada
Productive wells at beginning of year.....	1925	14	2,456	3	2,473
	1926	14	2,862	9	2,885
Number of productive wells drilled.....	1925				
	1926	3	11	2	16
Number of wells abandoned.....	1925		200		200
	1926		163	2	165
Number of dry wells drilled.....	1925		10		10
	1926		12	1	13
Number of productive wells at end of year.....	1925	14	2,862	9	2,885
	1926	17	2,758	10	2,785

Table 427.—Imports into Canada and Exports of Petroleum and its Products, 1924-1926

	1924		1925		1926		
	Quantity	Value	Quantity	Value	Quantity	Value	
		\$		\$		\$	
IMPORTS—							
Crude petroleum in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories.....	Gals.	465,958,509	20,260,488	436,258,650	23,414,837	570,383,547	31,338,734
Crude petroleum, gas oils other than naphtha, benzine and gasoline lighter than .8235 but not less than .775 specific gravity at 60 degrees.....	Gals.	139,745	10,875	4,181,914	227,378	60,562	6,159
Petroleum, crude, not in its natural state, .7900 specific gravity or heavier at 60 degrees temperature, when imported by oil refiners to be refined in their own factories..	Gals.	55,758	3,953	49,149	2,910	.....	.....
Petroleum (not including crude petroleum imported to be refined or illuminating or lubricating oils) .8235 specific gravity or heavier at 60 degrees temperature.....	Gals.	94,104,526	4,122,333	103,667,295	4,690,901	97,050,028	4,006,369
Petroleum, and other oils, imported by miners or mining companies or concerns for use in the concentration of ore of metals in their own concentrating establishments.....	Gals.	139,473	35,880	129,665	26,251	133,439	37,133
KEROSENE AND ILLUMINATING OILS							
Coal oil and kerosene, distilled, purified or refined.....	Gals.	5,410,973	444,646	4,860,876	391,538	3,611,778	404,051
Illuminating oils, composed wholly or in part of the products of petroleum, coal, shale or lignite, costing more than 30 cents per gallon.....	Gals.	10,655	4,215	2,451	1,776	6,210	2,919
Coal oil and kerosene, distilled, known as "engine distillates", .725 specific gravity and heavier, but not heavier than .770 specific gravity at 60 degrees temperature.....	Gals.	20,420	2,942	395,785	63,587	1,224,464	139,404
LUBRICATING OILS							
Lubricating oils, composed wholly or in part of petroleum, and costing less than 25 cents per gallon.....	Gals.	3,975,337	728,250	3,813,543	712,850	5,180,614	959,341
Lubricating oils, n.o.p.....	Gals.	4,521,086	1,714,403	4,632,195	1,770,739	5,079,264	2,009,214
GASOLINE AND OTHER OILS							
Gasoline under .725 specific gravity at 60 degrees temperature.....	Gals.	56,389,078	7,138,561	58,993,020	8,388,057	60,105,404	8,670,438
Gasoline .725 specific gravity but not heavier than .770 specific gravity at 60 degrees temperature.....	Gals.	17,084,248	2,166,847	24,897,661	3,204,479	22,666,298	3,277,288
Gasoline, n.o.p.....	Gals.	284,115	38,745	37,070	7,093	67,986	11,069
All other oils, n.o.p.....	Gals.	260,901	119,088	204,633	109,348	215,337	132,120
OTHER PRODUCTS OF PETROLEUM							
Grease, axle.....	Lb.	2,853,720	165,694	3,776,077	230,151	4,556,607	290,092
Paraffine wax.....	Lb.	837,317	65,782	1,601,505	124,234	1,946,905	141,241
Paraffine wax candles.....	Lb.	202,565	36,884	208,887	46,257	382,373	82,213
Vaseline and all similar preparations of petroleum for toilet, medicinal or other purposes.....	.....	.....	195,457	.....	216,464	.....	205,463
Petroleum, products of, n.o.p.....	Gals.	1,298,590	242,996	1,243,176	213,577	2,247,183	350,438
Total.....	.....	37,498,039	.....	43,842,427	.....	52,063,686	.....
EXPORTS—							
Oils, coal and kerosene, crude.....	Gals.	18,263,236	529,497	7,375,163	346,512	21,043,135	851,750
Oil, coal and kerosene, refined.....	Gals.	1,525,427	165,520	1,508,686	155,783	1,584,645	192,988
Oil, gasoline and naphtha.....	Gals.	1,403,716	256,966	1,568,855	333,330	3,867,536	773,958
Oil, mineral, n.o.p.....	Gals.	627,671	161,259	1,473,779	287,463	961,577	200,562
Wax, mineral.....	Cwt.	33,171	147,810	14,541	82,999	10,682	62,329
Total.....	.....	1,261,052	.....	1,206,087	.....	2,081,587	.....

Table 428.—Capital Employed in the Petroleum Industry in Canada, by Provinces, 1925 and 1926

	1925			1926			
	Ontario	Alberta	Canada	Ontario	Saskatchewan	Alberta	Canada
	\$	\$	\$	\$	\$	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—							
Cost of lands, buildings, plant machinery and tools.....	1,917,943	4,964,026	6,881,969	1,975,464	150,631	13,869,772	15,995,867
Cost of all supplies and stocks on hand.....	22,745	190,491	213,236	25,562	2,000	283,052	310,614
Cash, trading and operating accounts and bills receivable.....	28,423	831,089	859,517	25,775	13,300	1,293,586	1,332,661
<b>Total.....</b>	<b>1,969,116</b>	<b>5,985,606</b>	<b>7,954,722</b>	<b>2,026,801</b>	<b>165,931</b>	<b>15,446,410</b>	<b>17,639,142</b>

Table 429.—Employees, Salaries and Wages in the Petroleum Industry in Canada, by Provinces, 1925 and 1926

Province	Average number of employees				Salaries and wages		
	Salaried employees		Wage-earners	Total	Salaries	Wages	Total
	Male	Female					
					\$	\$	\$
<b>1925</b>							
Ontario.....	13	1	112	126	15,928	99,203	115,131
Alberta.....	10	1	122	133	17,794	185,176	202,970
<b>Canada.....</b>	<b>23</b>	<b>2</b>	<b>234</b>	<b>259</b>	<b>33,722</b>	<b>284,379</b>	<b>318,101</b>
<b>1926</b>							
Ontario.....	14	1	118	133	17,594	96,476	114,070
Saskatchewan.....	2	1	18	21	3,180	19,615	22,795
Alberta.....	43	29	408	480	87,362	564,616	651,978
<b>Canada.....</b>	<b>59</b>	<b>31</b>	<b>544</b>	<b>634</b>	<b>108,136</b>	<b>680,707</b>	<b>788,843</b>

Table 430.—Wage-Earners in the Petroleum Industry in Canada, by Provinces and by Months, 1925 and 1926

Month	1925			1926			
	Ontario	Alberta	Canada	Ontario	Saskatchewan	Alberta	Canada
January.....	108	57	165	106	.....	169	275
February.....	111	67	178	105	.....	157	262
March.....	109	67	176	106	.....	181	287
April.....	108	90	198	107	.....	216	323
May.....	106	114	220	108	8	246	362
June.....	115	137	252	115	16	339	470
July.....	111	165	276	119	14	365	498
August.....	111	165	276	116	18	385	519
September.....	111	141	252	108	18	398	524
October.....	107	135	242	110	22	377	509
November.....	106	152	258	109	17	347	473
December.....	105	141	246	109	1	333	443

Table 431.—Fuel and Electricity Used in the Petroleum Industry in Canada, 1925 and 1926

Description	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal.....tons	35	300	2,544	16,145
Lignite coal.....tons			745	6,387
Fuel oil.....imp. gal.			180,118	8,419
Gasoline.....imp. gal.			4,513	1,304
Gas.....M cu.ft.	1,480	824	956,006	23,431
Wood.....cords	33	160	70	280
Electricity.....k.w.h.	1,559,883	19,706	1,899,769	21,936
<b>Total.....</b>		<b>20,990</b>		<b>77,902</b>

Table 432.—Power Employed in the Petroleum Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	13	218	43	1,506
Internal combustion engines.....	30	1,118	53	1,271
<i>Total primary power.....</i>	<i>43</i>	<i>1,336</i>	<i>96</i>	<i>2,777</i>
Electric motors run by purchased power.....	50	467	62	555
<b>Total power employed.....</b>	<b>93</b>	<b>1,803</b>	<b>158</b>	<b>3,332</b>
Electric motors run by primary power in same plant.....			7	12
<i>Total electric motors.....</i>	<i>50</i>	<i>467</i>	<i>69</i>	<i>567</i>
Boilers.....	17	880	49	2,562

## 2. The Petroleum Refining Industry in Canada

Canada's petroleum refining and blending plants numbered 23 in 1926 and represented a capital investment in lands, buildings, machinery and general equipment amounting to more than 57 million dollars. This industry afforded employment to approximately 3,700 persons, and the total pay-roll approached 6 million dollars. Purchased fuel and electricity cost about 4 million dollars and purchased materials represented an outlay of approximately 51 million dollars. The selling value of refinery products was about 71 million dollars. The value added by manufacturing, representing the difference between the selling value at the refinery of the products made and the cost of the crude oils and other raw materials used, amounted to upwards of 20 million dollars.

Production of gasoline from Canadian refineries in 1926 totalled 222 million gallons of which 70 million gallons were obtained by the cracking processes. The total value of production was about 40·5 million dollars. In the previous year, 1925, only 165 million gallons of gasoline were made in Canada and the value was placed at 27·6 million dollars.

Kerosene is still an important product; production in 1926 totalled 58·5 million gallons, an increase of 30 per cent over the previous year.

Fuel and gas oils have been produced in much greater quantities during the past three or four years than formerly. In 1920, the output of fuel and gas oils from Canadian refineries amounted to 96.4 million gallons valued at 10.3 million dollars; in 1925 the output amounted to 172.3 million gallons valued at 9.7 million dollars, and in 1926 the final output for sale and for use as a fuel in the refineries totalled 228.4 million gallons worth 12 million dollars. It is estimated that, in 1926, a further 197 million gallons of fuel and gas oils were used in the cracking processes in the various refineries.

Lubricating oils and greases, asphalt, wax, and candles, are other important products made in the oil refineries.

In the separation and purification of the various products obtained by the refineries in the treatment of crude oil, large quantities of sulphuric acid, caustic soda, and other chemical products are used. It appears that the consumption of 66° Bé. sulphuric acid in petroleum refining is approximately one pound of acid to six gallons of crude oil; for caustic soda, the average seems to be about one pound to 100 gallons of oil. The consumption of containers, cooperage-stock, etc., reaches large figures annually, even though some shipping containers used for oil are returnable. The total cost of materials used in manufacturing in 1926 was in the neighbourhood of 50 million dollars.

Canadian refineries, situated at strategic points across the Dominion for convenience in marketing their products, treated in 1926, about 12 million gallons of oil from Canadian wells (including naphtha from the Royalite Oil Company wells in Alberta), and about 570 million gallons of imported oils obtained chiefly from the United States, Mexico, and Peru.

There are now 17 plants in Canada engaged in the refining of oils for the production of gasoline, kerosene, lubricating oils, waxes, and petroleum coke. Of these, 4 are located in Ontario, 5 in Alberta, 3 in British Columbia, 2 in Quebec, and one in each of the provinces of Nova Scotia, Manitoba and Saskatchewan. Six other plants make lubricating oils and greases as their principal product. Of these, 3 are located in Ontario and 3 in Quebec.

**Table 433.—Principal Statistics of the Petroleum Products Industry in Canada, 1922-1926**

Year	Number of plants	Capital employed	Number of employees	Salaries	Wages	Cost of fuel and electricity	Cost of materials	Selling value of products	Value added by manufacturing
		\$		\$	\$	\$	\$	\$	\$
<b>Petroleum refining—</b>									
1922.....	13	61,253,400	3,498	753,834	4,637,451	4,227,615	38,129,880	56,495,821	18,365,941
1923.....	14	60,288,861	4,196	816,751	4,714,818	4,054,846	36,435,306	42,749,716	6,314,410
1924.....	17	53,095,784	3,603	866,974	4,757,004	3,580,032	36,569,292	48,677,347	12,008,055
1925.....	13	49,461,900	3,655	913,688	4,708,210	3,433,017	37,814,303	49,802,615	11,988,312
1926.....	17	56,476,449	3,698	1,028,346	4,754,243	3,580,049	50,783,871	70,570,240	19,786,369
<b>Lubricating oils and greases—</b>									
1922.....	6	800,629	57	79,101	22,297	4,172	283,311	539,742	256,431
1923.....	6	738,843	62	93,625	23,123	6,236	381,390	709,025	327,638
1924.....	8	700,010	66	94,307	31,420	6,500	423,419	733,720	310,301
1925.....	8	1,118,649	83	101,252	51,896	14,113	446,721	959,512	512,791
1926.....	6	701,676	55	78,411	31,899	4,746	388,288	626,071	237,783
<b>Total—</b>									
1922.....	19	62,054,029	3,555	832,935	4,659,748	4,321,787	38,413,191	57,035,563	18,622,372
1923.....	20	61,027,704	4,257	910,379	4,737,941	3,897,272	36,816,696	46,280,534	9,463,838
1924.....	25	53,795,794	3,669	961,281	4,788,424	3,586,532	37,092,711	49,411,067	12,318,356
1925.....	21	50,580,549	3,738	1,014,940	4,760,106	3,447,130	38,261,024	50,762,127	12,501,103
1926.....	23	57,178,125	3,753	1,106,757	4,785,642	3,584,795	51,132,159	71,196,311	20,024,152

Table 434.—Materials Used and Products Made by the Oil Refineries of Canada, 1924-1926

	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
<b>MATERIALS USED—</b>						
Crude oil, product of Canadian wells.....Imp. gal.	5,172,903	403,099	12,337,192	1,511,181	12,203,286	1,673,632
Crude oil, imported.....Imp. gal.	361,971,731	33,018,299	432,778,502	33,344,004	573,263,043	45,396,649
Sulphuric acid (66° Bé) (Not made by firm reporting).....lb.	57,693,733	605,383	42,843,604	447,528	53,919,554	423,229
Sulphur (not used in acid manufacture) lb.	90,955	2,625	141,265	3,988	155,076	4,283
Caustic soda.....lb.	3,796,826	146,842	4,220,371	154,150	6,216,823	234,326
Litharge.....lb.	315,723	30,197	549,450	59,825	697,417	72,269
Other materials.....		2,462,847		777,243		1,021,695
Shipping containers.....				1,516,384		1,957,788
<b>Total.....</b>		<b>36,669,292</b>		<b>37,814,303</b>		<b>50,783,871</b>
<b>PRODUCTS MADE—</b>						
Gasoline.....Imp. gal.	160,045,739	25,799,219	164,670,072	27,589,037	222,146,704	40,467,868
Petroleum spirits.....Imp. gal.	788,571	132,093	1,137,787	199,618	2,650,956	245,841
Kerosene.....Imp. gal.	61,308,467	7,486,042	45,026,459	5,966,913	58,502,190	9,402,396
Fuel and gas oils.....Imp. gal.	177,123,232	9,076,746	172,387,242	9,652,255	228,474,212	12,007,320
Lubricating oils.....Imp. gal.	14,341,920	2,585,717	14,801,986	2,697,142	16,894,609	3,671,756
Grease.....lb.	10,004,590	184,655	9,076,336	184,033	10,903,112	218,965
Petroleum coke.....tons	38,102	270,403	34,018	248,691	51,545	307,443
Wax and candles.....lb.	9,112,143	551,434	15,736,867	734,322	9,858,490	648,303
Other products.....		2,591,038		2,530,604		3,600,348
<b>Total.....</b>		<b>48,677,347</b>		<b>49,802,615</b>		<b>70,570,240</b>

## CHAPTER TEN

## CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

Including Cement, Clay and Clay Products (Brick, Drain Tile, Kaolin, Sewer Pipe, Structural Tile, Sanitary Ware and Pottery made from Domestic Clays, Fire Clay, Fire Brick, Fire Clay Blocks and Shapes, Imported-Clay Products), Lime, Sand and Gravel, Sand-Lime Brick, Slate, and Stone.

In twenty years, production in the clay products and other structural materials industries in Canada has increased more than three-fold; from a valuation of \$12,863,049 in 1907, the total for these industries rose to \$39,959,398 in 1926.

Cement production in Canada in 1887 amounted to 69,843 barrels worth \$81,909; in 1926, shipments were 8,707,021 barrels valued at \$13,013,283. The value of clay products produced increased from a total of \$1,126,057 in 1886 to \$10,357,323 in 1926. Lime shipments during 1886 were valued at \$283,755 or only 7.5 per cent of the grand total for lime of \$3,781,484 in 1926. In the stone industry a very substantial growth has also been recorded; data for 1886 place the value of stone production at \$723,593, while the 1926 total was \$7,865,874. Production records for sand and gravel date back no further than 1912; shipments at that time were valued at \$1,512,099 as compared with a total of \$4,941,434 in 1926.

Contracts awarded for building and construction in Canada in 1912 as reported by the *MacLean Building Review* were valued at \$463,083,000, which is still the high record mark for the building industry. In 1913 contract awards totalled \$384,157,000, and in the following year a decrease to \$241,952,000 was recorded. During the war period (1915-1918) construction work was largely neglected and the value of building awards remained below the 100-million-dollar mark during these years. A revival of building set in after the war, and in each year since 1920 the volume of building has been well above the 200-million-dollar mark. In 1926, the total value of building contracts awarded reached \$372,947,900, the highest on record since the banner construction periods of 1912 and 1913.

Costs of building materials in Canada as shown by the *Dominion Bureau of Statistics* index number of prices applying to 32 building and construction materials (base 100 in 1913) varied considerably from 1914 to 1924, inclusive. Yearly average for 1914 was low at 94; a further decline was registered in 1915 when the index number averaged only 90. An annual appreciation was apparent during the following five years until the maximum for the group of 215 was reached in 1920. The next year a falling off to 183 was recorded; followed by a further cost diminution to 162 in 1922, and a rise to 167 in the succeeding twelve months. During 1925 and 1926, building costs were very stable; in the latter year, the index number ranged from a maximum of 152.3 in January to 147.7 in December, or an average of 147 for the year.

Table 435.—Value of Clay Products and Other Structural Materials Produced in Canada, by Provinces, 1924-1926

Province	1924	1925	1926
	\$	\$	\$
Prince Edward Island.....	4,588	8,495	.....
Nova Scotia.....	528,309	610,727	626,188
New Brunswick.....	321,994	298,763	383,233
Quebec.....	11,272,539	13,179,513	13,222,702
Ontario.....	17,429,449	17,089,582	17,650,738
Manitoba.....	1,161,491	1,767,050	2,608,110
Saskatchewan.....	234,325	184,757	359,409
Alberta.....	1,657,742	1,686,545	2,144,391
British Columbia.....	2,770,432	2,823,802	2,964,627
Canada.....	35,380,869	37,649,234	39,959,398

Table 436.—Production, Imports, Exports and Apparent Consumption of Clay Products and Other Structural Materials in Canada, 1924-1926

Item		Production	Imports	Exports	Apparent consumption
		\$	\$	\$	\$
Cement, portland.....	1924	13,398,411	69,320	213,845	13,253,886
	1925	14,046,704	63,067	1,498,495	12,611,276
	1926	13,013,283	96,679	358,231	12,751,731
Clay and clay products.....	1924	9,215,077	7,158,371	543,572	15,829,876
	1925	9,529,691	7,478,084	220,818	16,786,957
	1926	10,357,323	8,196,014	224,916	18,328,421
Lime.....	1924	3,178,541	46,578	411,122	2,813,997
	1925	3,387,652	47,639	312,168	3,123,123
	1926	3,781,484	42,855	344,616	3,479,723
Sand and gravel.....	1924	3,181,083	442,676	210,496	3,413,263
	1925	3,220,410	537,237	198,485	3,559,162
	1926	4,941,434	584,526	278,278	5,247,682
Slate.....	1924		220,402		220,402
	1925		205,507		205,507
	1926		218,142		218,142
Stone.....	1924	6,407,757	913,325	170,113	7,150,969
	1925	7,464,777	824,992	138,892	8,151,377
	1926	7,865,874	1,144,614	194,588	8,815,900
<b>Total.....</b>	<b>1924</b>	<b>35,380,869</b>	<b>8,850,672</b>	<b>1,549,148</b>	<b>42,682,393</b>
	<b>1925</b>	<b>37,649,234</b>	<b>9,156,526</b>	<b>2,368,358</b>	<b>44,437,402</b>
	<b>1926</b>	<b>39,959,398</b>	<b>10,282,830</b>	<b>1,400,729</b>	<b>48,841,599</b>

## CEMENT

Natural rock cement is made by calcining at a moderate heat either an argillaceous limestone or a calcareous shale, which contains an excess of clay over the proportion required for Portland cement and generally a considerable quantity of magnesia. The calcination of these materials produces more or less incipient vitrification of the contained lime and clay.

Natural rock cement has been made and used for centuries. Its manufacture and proper manipulation seem to have been well understood by the Romans.<sup>1</sup>

Portland cement is made by heating to nearly the fusing point an accurately proportioned and intimately blended artificial mixture of some material containing a high percentage of lime with another material containing silica and alumina in proper quantity and proportion. The lime is usually furnished by limestone or marl, and the silica and alumina by clay or shale. The necessary proportions of these three ingredients are fixed within comparatively narrow limits, and the composition of the mixture must therefore be constantly watched and chemically regulated. It is to this careful proportioning of the raw materials and the higher temperature of burning that Portland cement owes its great advantage over natural cement in uniformity and strength.<sup>2</sup>

## CANADA

Although the first official record of the production of cement in Canada is that of the manufacture of hydraulic cement from the black limestones of Quebec in 1856, it is understood that lime and hydraulic cement were made at Hull between 1830 and 1840. The cement was manufactured from a grey argillaceous magnesian limestone obtained nearby. Plants were also operated at an early date in Quebec, at the mouth of the Magdalen river, Gaspé county, and in Argenteuil county; in Ontario, at Kingston and Thorold.

It was not until 1887 that serious competition to the domestic production showed itself in large importations of Portland cement. In order to cope with this competition two Canadian manufacturers of natural cement changed their mills and processes. Canadian Portland cement made its appearance on the market in 1889. Two additional plants were constructed about this time; one at Shallow Lake, Ontario, and another at Longue Pointe, Quebec.

The period 1898 to 1905 was the scene of a boom in the construction and promotion of cement plants in Canada. Eleven marl plants were erected during these years, of which only three were really successful.

<sup>1</sup> Wells, J. W.: "Hydraulic Cements in Manitoba."

<sup>2</sup> Tazze, A. C.: "Cement Industry in Canada."

Prior to 1894, the cement requirements of British Columbia were supplied mainly by importations from England and the present Prairie provinces drew their supply from Ontario and the United States. In 1893, the Canadian Pacific Railway Company commenced the construction of a small plant at Vancouver in order to have available, at a reasonable cost, the necessary material for their replacement work. Four plants in all have been built in British Columbia, only one of which is being operated at present.

Two plants were built in Alberta during 1906 and 1907. This was the start of the cement industry in Alberta, and in the course of the past 20 years, four plants have been constructed, of which two were in operation during 1926.

The first mill to be erected in Manitoba was located at Arnold, 70 miles from Winnipeg; this was a natural cement plant. Another natural cement plant was started in 1906 at Babcock and in 1911 the first Portland cement plant was constructed in this province at Tuxedo. The Babcock and Tuxedo plants are still active.

Census returns for 1871 show that 6 cement plants were in operation. The capital invested in these plants totalled \$56,000; employees numbered 66 with a remuneration of \$25,300; and the value of products was \$51,300. Reports obtained ten years later record 9 active plants with a capital investment of \$57,400; a payroll of 128 men earning \$38,151; and products valued at \$91,658. In 1913, the 27 plants in operation produced 8,658,805 barrels valued at \$11,019,418 and employed 4,276 men whose earnings totalled \$3,466,451. During 1926, twelve plants were operated and 8,707,021 barrels were shipped, valued at \$13,013,283. Labour statistics showed maximum employment in May with 2,483 men working; January with 1,723, was the month showing the lowest average employment. The average number of wage-earners for the year was 2,216 in addition to whom there were 124 salaried employees on the rolls; combined earnings totalled \$3,052,662. Capital actually employed by the firms operating in this industry in 1926 was \$41,380,000. Fuel and electricity costs reached the sum of \$3,424,156, of which \$2,675,162 was expended for fuel and \$748,994 for electric power. Plant equipment included 1,166 electric motors with a total rating of 67,700 h.p.

In 1926 the average selling price of cement per barrel, f.o.b. plant, was as follows: Quebec, \$1.22; Ontario, \$1.41; Manitoba, \$2.57; Alberta, \$2.06; and British Columbia, \$2.27.

Portland cement to the amount of 21,114 varrels balued at \$77,866 was imported into Canada during 1926. The average import value of the imported cement in 1926 was \$3.68 per barrel, while in the preceding year the average was \$2.89. Exports of cement were recorded at 285,932 barrels invoiced at \$358,231.

#### NOVA SCOTIA

Puzzolan cements differ from Portland and natural cements in so much as their constituents are only mixed and ground and are not burned. In Nova Scotia puzzolan cement was first produced from blast furnace slag and lime at Sydney in 1905. This plant was closed down in 1915, re-opened in 1920, but has been idle since 1921.

#### QUEBEC

Hydraulic cement was made at the Wright plant in Hull between 1830 and 1840. This cement sold at prices ranging between \$1.50 and \$2.50 per barrel of 300 pounds. Only natural cement was produced at this plant until the invasion of the Canadian market by imported Portland cement, necessitated the changing of the processes in order to retain the local business. In 1889, the first Portland cement produced by this concern was placed on the market. Operations were carried on until the destruction of the plant by fire in 1900.

During 1888, a small plant was erected at Pointe Claire, near Montreal: a small quantity of Portland cement was produced but the operations were not successful and were discontinued. A plant was constructed in 1889 at Longue Pointe on the bank of the St. Lawrence river, east of Montreal and early the following year shipments of Portland cement commenced. The first dry process rotary kiln used in Canada was installed at this plant in 1899. Eight years later, the Vulcan Company purchased this property and built a new mill with most modern equipment. Operations at this plant also ceased in 1914.

The construction of the International plant at Hull was started in 1903 and within two years shipments were being made. This plant was enlarged in 1908 and the following year it became a unit in the large merger company. Owing to lack of market, because of the war, the plant was closed in 1914. Considerable work was done on the mill in 1925 and in June, 1926, operations re-commenced.

A new plant was started in 1907 on the north side of the St. Lawrence river near the eastern limit of Montreal. Within two years the company was absorbed in the consolidation of thirteen plants in Canada. Very extensive alterations and additions were made to this plant, and it has been in continuous operation since 1909.

In August, 1925, the Unic plant was opened up at St. Francois de Sales, about 20 miles northeast of Montreal; operations ceased here in 1926.

The National plant at Montreal East commenced shipments in 1926.

"The new modern mill of the National Cement Company at Montreal East is located about 12 miles from the center of the city of Montreal and a little over a mile from the St. Lawrence river. It is served by the Montreal Tramways, the Canadian National Railways and an improved highway, thus facilitating the local and outside shipments; moreover a rail connection to the St. Lawrence river makes the receipt of coal and gypsum, and the shipment by water, feasible. The plant, like that of the Canada Cement Company, one mile to the south-west, is located on the south-east edge of a ledge of limestone of the Trenton formation. The stone is quarried next to the plant and constitutes the raw material. This cement rock is of an ideal mixture in the deposit, requiring no addition of calcium carbonate, therefore the plant utilizes the dry process."<sup>1</sup>

## ONTARIO

Cement was produced at Napanee Mills (now Strathcona) in 1867. Clinker was made in kilns at this place and hauled by wagons to Napanee for grinding and packing. A new plant was constructed at Napanee Mills in 1891 for the production of Portland cement from marl and clay. Marl was transported 25 miles by rail from Marlbank and clay was obtained locally. Operations at this Strathcona mill commenced in December, 1891. During the same year a small Portland cement plant was erected at Marlbank which obtained its raw materials from Lime lake. The following year, the Marlbank plant was opened up and operated until 1898 when it was remodelled. In 1900 the Strathcona and Marlbank plants were taken over by a new company, and three years later the Marlbank mill was enlarged and improved, with the result that, in 1904, the Strathcona mill was closed permanently. Marlbank operations only continued until 1914 and since then the plant has been dismantled.

A company was incorporated in April, 1888, for the purpose of making Portland cement at Shallow lake, Ontario. At that time the rotary kiln was a new departure in the cement industry in England and one of these kilns was purchased and put into operation at the newly erected plant. After many vicissitudes, the company was re-organized in 1902; new equipment was obtained, and operations were made commercially successful. The plant was active until 1914 but it has since been dismantled.

The Hanover plant was built in 1898 to use marl and clay as raw materials. Marl was used at this plant until 1920 when it was replaced by limestone shipped by rail from Walkerton. In September, 1925, the mill was closed.

The Lakefield plant, another marl and clay proposition, was erected in 1901, and operated until 1914. This plant is being rebuilt.

Another mill was commenced in 1907 at Point Anne, near Belleville; shipments were started in the following year. Since that time the plant has been enlarged and operations have been carried on continuously.

Construction of a new plant at Port Colborne, near the lake Erie entrance to the Welland canal was started in 1907 and shipping commenced during 1908. In 1909, it became a unit of the merger company and was enlarged considerably; operations have been maintained since that date.

<sup>1</sup> Quebec Bureau of Mines Annual Report, 1926.

A departure from the dry process employed in the rock plants was instituted in 1912 when the St. Marys' mill was brought into operation using the wet process. This concern has been active during the past 14 years and is still a large producer.

Records for 1869 show two cement plants in Ontario, with an investment in plant and machinery of \$28,000, operating at Thorold and Napanee Mills and producing products valued at \$3,825. The following year these two plants employed 26 men and produced \$4,950 worth of products. In 1871 employment was furnished 28 men and the value of the mill output was \$11,700. The growth of the industry through the natural cement stage to the final concentration of the producers on the manufacture of Portland cement may be traced by the inception and subsequent disappearance of many companies. An idea of the magnitude of the industry can be obtained by a glance at the data for 1913 after consulting the figures for the earlier years, and then comparing these with the statistics for 1925 and 1926. In 1913 the 14 Ontario plants with a production of 3,992,998 barrels, employed 1,382 men earning \$955,729, and in 1925 the 4 plants operating produced 3,462,358 barrels at \$5,253,911, employed 749 men whose wages totalled \$1,018,915. Incidentally the capital actually employed in 1925 was \$12,513,281. During 1926 only three plants were operated, their locations being Belleville, Port Colborne and St. Mary's. The production amounted to 3,398,860 barrels with a valuation of \$4,792,857.

#### MANITOBA

Cement production in this province started with the manufacture of the natural product. The first plant was built at Arnold but the operations here ceased years ago. Babcock, a few miles from Arnold, was the site for another mill which was constructed in 1906. This plant is still active. The construction of a plant at Tuxedo (Fort Whyte) 9 miles southwest of Winnipeg was started in 1911. For two years this plant used clinker produced near Belleville, Ontario. Since 1913 this mill has been using limestone obtained from a quarry at Steep Rock on the east shore of Lake Manitoba, 145 miles north of Winnipeg.

#### ALBERTA

Plants were erected at Calgary and Exshaw in 1906 and 1907. Raw materials for the former mill consisted of limestone hauled by rail from The Gap, some 60 miles west and shale from Sandstone, 20 miles south. The Exshaw mill, located 60 miles west of Calgary, uses limestone from a deposit close to the plant and shale which is transported by rail three miles from Kananaskis. In 1914 the Calgary mill was closed down and it has since been dismantled. A dry process plant was erected at Blairmore in 1909; it changed hands in 1919 but owing to insufficient demand for cement in the district, the plant has remained idle since that date.

A marl plant was built in 1912, at Marlboro about 140 miles west of Edmonton. Five years later a change was made to dry process, using limestone obtained from the mountains to the west, and local clay. Shipments have been made annually from this plant since 1917.

Work was commenced on a new plant at Medicine Hat in 1913 but the construction had not been completed before the outbreak of war in 1914 and the changed conditions caused the suspension of further work on this building.

#### BRITISH COLUMBIA

The Canadian Pacific Railway Company was the first to attempt to manufacture cement in British Columbia. About the year 1891 this company started the replacement, on a large scale, of the original wooden structures on the mountain section of its line, using in this work large quantities of masonry. The cement required was very costly, as it was all brought from England in sailing vessels which had to make the long, slow trip around Cape Horn.

In an effort to reduce this cost the company decided to investigate the possibility of making cement at or near Vancouver, and for this purpose brought out from the Isle of Wight an experienced cement maker and chemist, who, after examining various materials available, made

a favourable report, and, in 1893, was commissioned to build a small plant on a site selected on the water front at Vancouver. Limestone was brought by barge from Texada Island, about forty miles northwest of Vancouver, clay by rail from a cutting about thirty miles east, and coal by barge from the Dunsmuir mines on Vancouver Island. The limestone was burned in simple kilns and then mixed with clay and water to form a slurry which was dried on a floor of iron plates with fires underneath. The dried slurry was burned in upright kilns and the clinker was ground by burr stones. The cement is said to have been of excellent quality and was used in thousands of yards of masonry which is still in good condition. This plant was in operation about ten years, after which it was dismantled. In 1904, a rotary kiln plant was erected at Tod Inlet, Vancouver Island, which by 1911 had increased in capacity until there were five kilns operating. Five years later the change in process from dry to wet was made. Operations were suspended at this mill in 1922.

A mill was erected at Bamberton, Vancouver Island, in 1912; production commencing the following year. In 1916 this plant was closed down only to re-open in 1922. Production has been continuous since that date.

In 1912, another plant was built near Princeton but the company operating it went into liquidation in 1914 and the plant has since been dismantled.

**Table 437.—Production of Cement in Canada, 1887-1926**

Year	Barrels	Value	Year	Barrels	Value	Year	Barrels	Value
		\$			\$			\$
1887.....	69,843	81,909	1901.....	450,394	660,030	1915.....	5,681,032	6,977,024
1888.....	50,668	35,593	1902.....	722,525	1,127,550	1916.....	5,369,560	6,547,728
1889.....	90,474	69,790	1903.....	719,993	1,225,247	1917.....	4,768,488	7,724,246
1890.....	102,216	92,405	1904.....	967,172	1,338,239	1918.....	3,591,481	7,076,503
1891.....	93,479	108,561	1905.....	1,360,732	1,924,014	1919.....	4,995,257	9,802,433
1892.....	117,408	147,663	1906.....	2,128,374	3,170,859	1920.....	6,651,980	14,798,070
1893.....	158,597	194,015	1907.....	2,441,868	3,781,371	1921.....	5,752,885	14,195,143
1894.....	108,142	144,637	1908.....	2,666,333	3,709,954	1922.....	6,943,972	15,438,481
1895.....	128,294	173,675	1909.....	4,067,709	5,345,802	1923.....	7,543,589	15,064,661
1896.....	149,090	201,651	1910.....	4,753,975	6,412,215	1924.....	7,498,624	13,398,411
1897.....	205,213	275,273	1911.....	5,692,915	7,644,937	1925.....	8,116,597	14,046,704
1898.....	250,209	397,580	1912.....	7,132,732	9,106,556	1926.....	8,707,021	13,013,283
1899.....	396,753	633,291	1913.....	8,658,805	11,019,418			
1900.....	417,552	662,910	1914.....	7,172,480	9,187,924	<b>Total.....</b>	<b>126,894,431</b>	<b>206,955,756</b>

**Table 438.—Output, Sales, Imports, Exports and Consumption of Cement in Canada, 1924-1926**

	1924		1925		1926	
	Barrels	Value	Barrels	Value	Barrels	Value
		\$		\$		\$
OUTPUT.....	7,768,652		7,869,946		9,041,411	
SOLD OR USED.....	7,498,624	13,398,411	8,116,597	14,046,704	8,707,021	13,013,283
STOCKS DEC. 31.....	1,521,574		1,274,923		1,609,313	
IMPORTS—						
Portland cement.....	27,672	69,320	21,849	63,067	21,114	77,866
Manufactures.....		9,772		13,753		18,813
EXPORTS.....	153,520	213,845	997,915	1,498,495	285,932	358,231
APPARENT CONSUMPTION.....	7,872,776		7,140,531		8,442,203	

Table 439.—Sales of Cement in Canada, by Provinces, 1924-1926

Province	1924		1925		1926	
	Barrels	Value	Barrels	Value	Barrels	Value
		\$		\$		\$
Quebec.....	2,758,316	4,796,959	3,365,802	5,689,991	3,727,377	4,535,386
Ontario.....	3,564,499	5,668,671	3,462,358	5,253,911	3,398,860	4,792,857
Manitoba.....	286,948	746,750	407,395	1,037,929	612,155	1,572,401
Alberta.....	416,534	945,700	395,857	913,529	423,766	873,621
British Columbia.....	472,327	1,240,331	485,185	1,151,344	544,863	1,239,018
<b>Canada.....</b>	<b>7,498,624</b>	<b>13,398,411</b>	<b>8,116,597</b>	<b>14,046,704</b>	<b>8,707,021</b>	<b>13,013,283</b>

Table 440.—Principal Statistics of the Cement Industry in Canada, 1922-1926

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	11	41,573,737	1,753	2,315,240	*2,457,456	2,976,152	15,438,481
1923.....	10	38,284,494	1,842	2,551,784	2,809,414	2,947,242	15,064,661
1924.....	10	36,766,574	1,837	2,531,622	2,872,711	1,524,158	13,398,411
1925.....	11	38,081,583	1,926	2,511,400	2,848,904	1,177,103	14,046,704
1926.....	12	41,380,000	2,340	3,052,662	3,424,156	(a)	13,013,283

\* Fuel only.

(a) Data not available.

Table 441.—Capital Employed in the Cement Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
<b>CAPITAL EMPLOYED AS REPRESENTED BY—</b>		
Cost of lands, buildings, plant, machinery and tools.....	33,545,100	35,368,100
Cost of supplies and stocks on hand.....	2,857,507	3,235,136
Cash, trading and operating accounts and bills receivable.....	1,678,976	2,776,764
<b>Total.....</b>	<b>38,081,583</b>	<b>41,380,000</b>

Table 442.—Employees, Salaries and Wages in the Cement Industry in Canada, 1925 and 1926

Class	1925		1926	
	Number of employees	Salaries and wages	Number of employees	Salaries and wages
		\$		\$
Salaried employees.....	105	213,666	124	272,770
Wage-earners.....	1,821	2,297,734	2,216	2,779,892
<b>Total.....</b>	<b>1,926</b>	<b>2,511,400</b>	<b>2,340</b>	<b>3,052,662</b>

Table 443.—Wage-Earners in the Cement Industry in Canada, by Months, 1925 and 1926

Month	1925	1926	Month	1925	1926
January.....	1,142	1,723	July.....	1,932	2,417
February.....	1,348	1,886	August.....	2,000	2,377
March.....	1,542	1,979	September.....	2,030	2,287
April.....	1,658	2,178	October.....	1,846	2,149
May.....	1,704	2,483	November.....	1,786	2,136
June.....	1,807	2,478	December.....	1,571	1,996

Table 444.—Fuel and Electricity Used in the Cement Industry in Canada, 1925 and 1926

Kind		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Anthracite coal.....	tons			441	2,016
Bituminous coal.....	tons	426,462	2,227,593	504,577	2,664,760
Coke.....	tons			49	548
Fuel oil.....	Imp. gals.			225	54
Gas.....	M cu. ft.			9,274	5,564
Gasoline.....	Imp. gals.	6,082	1,472	8,559	2,220
Electric power.....	k.w.h.	131,143,391	619,839	169,280,187	748,994
<b>Total.....</b>			<b>2,848,904</b>		<b>3,424,156</b>

Table 445.—Power Employed in the Cement Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturer's rating	Number of units	Total h.p. according to manufacturer's rating
Steam engines and turbines.....	4	2,386	5	418
Internal combustion engines.....	13	334	11	283
Hydraulic turbines or water wheels.....	6	700	—	—
<i>Total primary power.....</i>	<i>23</i>	<i>3,420</i>	<i>16</i>	<i>701</i>
Electric motors run by purchased power.....	838	47,107	1,122	65,800
<b>Total power employed.....</b>	<b>861</b>	<b>50,527</b>	<b>1,138</b>	<b>66,501</b>
Electric motors run by primary power in same plant.....	129	5,536	44	1,900
<i>Total electric motors.....</i>	<i>967</i>	<i>52,643</i>	<i>1,166</i>	<i>67,700</i>
Boilers.....	16	2,577	8	2,302

## CLAY AND CLAY PRODUCTS

## CANADA

Under "Clay and Clay Products" there have been included statistics relating to production in Canada from domestic clays, of (a) fire clay; (b) fire clay blocks and shapes; (c) fire brick; (d) brick made by the different processes, such as the soft mud process, stiff mud process and dry press; (e) structural tile, such as hollow blocks, roofing tile, floor tile (quarries), and ceramic or glazed floor and wall tile; (f) drain tile; (g) sewer pipe, including copings, flue linings, etc.; and (h) pottery.

The clay products industry has been carried on in Canada for many years; census records for 1871 show 426 brick and tile producers in Canada employing 3,073 workers whose wages totalled \$399,698. The value of products made in that year was \$925,235. Corresponding with

the growth of the country, ten years later the number of plants in operation had risen to 560, with a payroll of 4,129 employees, wages amounting to \$608,690, and a production value of \$1,541,892. Statistics for 1886, record 261 brick and 82 tile plants in operation with a total output valued at \$1,016,217. Building brick (common and pressed) was produced in increasing quantities from the beginning of the century; 1900 recorded a valuation of \$2,275,000 while in 1906, the sum of \$4,102,590 was realized from the sale of these products. Almost similar conditions applied to the activities of the plants producing other clay products.

On the basis of production values, 1920 was the banner year for the producers of clay products in Canada. The 223 operators reported sales aggregating in value to \$10,664,929; wage-earners numbered 5,212 and the outlay for wages was \$5,053,837. In 1926, sales showed an increase of 8.69 per cent over the total of \$9,529,691 reported in 1925. Ontario's production in 1926 was valued at \$5,356,469 or 51.7 per cent of the total for Canada; Quebec sales totalled \$2,702,298; Alberta sales \$804,933; British Columbia, Nova Scotia, Manitoba, Saskatchewan and New Brunswick followed in the order named.

Capital employed in the 200 plants in operation during 1926 was \$28,152,062. Salaries and wages paid to the 4,395 employees amounted to \$4,346,687. Fuel and electricity consumed accounted for an outlay of \$2,080,054. Primary power employed totalled 148 units with a manufacturers' rating of 9,352 h.p., in addition to which there were 376 electric motors in operation rated at 14,480 h.p.

Importations into Canada of clay, clay products and similar materials reached a high mark in 1920 when the value was recorded at \$9,414,783. Since that date, the annual imports have ranged from 7.1 million dollars to 8.19 million dollars. The principal items of the import group were earthenware and chinaware and fire brick, which made up 72 per cent of the total in 1926.

**Brick.**—Common and pressed brick produced in Canada during 1886 had a value of \$873,600: the plants in operation were located in Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, North West Territories and British Columbia. Progress in the brick industry was recorded during the succeeding twenty years and in 1906 the value of common and pressed brick produced reached a total of \$4,102,590. In the following year, data were obtained segregating the production of these two classes of brick: 439,016,000 common brick valued at \$3,455,524 and 78,922,000 pressed brick worth \$794,722 were shipped during 1907.

Common brick production reached its highest point in 1912 when 769,192,000 at an average value of \$9.11 per thousand, were shipped. During the same year pressed brick production established a record at 125,180,000 with an average value of \$12.86 per thousand. Since 1917, the value per thousand has never fallen as low as the average price in 1912.

In 1924 a new schedule for the collection of clay products statistics was designed as the result of a conference of the *Dominion Bureau of Statistics* officials with the members of the *Canadian National Clay Products Association*. This new form subdivides the information regarding the production of brick according to the different processes. Hereafter data are recorded under the separate headings; face and common—soft mud, stiff mud and dry press processes.

The production of building brick during 1926 amounted to 358,348,000 valued at \$6,525,565 as compared with 351,186,000 worth \$5,944,163 shipped in 1925.

Paving brick production in Canada was first recorded in 1897 when 4,568,000 were shipped by plants at Toronto, Ontario. During the period 1899-1907, the average annual production was 3,917,000. Prior to 1914 the total Canadian output of paving brick came from West Toronto, Ontario, where shale from the banks of the Humber river was used. In 1914, 1915 and 1916 the Clayburn plant in British Columbia produced a small quantity. In 1916 a plant at Edmonton, Alberta, produced a minor quantity of paving brick. During the succeeding five years there was no production, but, in 1922, the Clayburn plant shipped 151,000. Production ceased until 1926, when the British Columbia plant made shipments of 122,000 paving brick.

**Drain Tile.**—Data regarding the production of drain tile in Canada are available since 1891. From information obtained by the *Ontario Department of Mines*, production during that year was valued at \$90,000. Ten years later production had increased until a valuation of

\$250,000 was reached. A record was set up for the output of drain tile in 1919 when the valuation attained a total of \$616,510. During 1926, drain tile shipments totalled 14,258,000 averaging \$27.78 per thousand.

**Kaolin.**—Deposits of kaolin at St. Remi d'Amherst were first noted by the Geological Survey in 1894. Two years later samples were shipped to porcelain plants at Trenton, New Jersey, but, it was not until 1911 that any serious attempt was made to develop this property. Production commenced in 1912, when 20 tons were shipped. Increases were recorded annually until the maximum production of 1,750 tons for the industry was reached in 1916. Shipments continued up to 1923, in which year, 163 tons were sold. No shipments of kaolin were made from Canadian deposits in 1924, 1925 and 1926.

Some development work was done during 1925 and 1926 on the china clay deposits on the Mattagami river, near Long Falls, Temiskaming district, Ontario.

**Sewer Pipe.**—Records of sewer pipe production in Canada date back to 1888 when shipments of this commodity were valued at \$266,320. Production during the succeeding years varied considerably until in 1907 a valuation of \$667,100 was recorded. Seven years later, 1914, the sewer pipe production was valued at \$1,104,499. In 1922, the high mark for the industry was reached, when sewer pipe to a value of \$1,766,347 was shipped from Nova Scotia, Quebec, Ontario, Alberta and British Columbia plants. The total capital employed in these plants was \$3,057,149 and employment was afforded 448 persons who received \$547,411 in salaries and wages. Sewer pipe, copings and flue linings shipped in 1926 amounted to 75,996 tons valued at \$1,480,776. Five plants were active during the year with a capital investment of \$3,026,076 and a payroll of 407 men earning \$497,512.

**Structural Tile.**—Records of the production of structural tile in Canada include such items as hollow blocks (fireproofing and load-bearing tile), roofing tile, and floor tile. Hollow blocks are produced in every province except Prince Edward Island and New Brunswick. Roofing and floor tile are made in Ontario. The total production of structural tile in Canada during 1926 was valued at \$1,360,066 as compared with a value of \$1,128,058 in the previous year and \$963,302 in 1924.

**Sanitary Ware and Pottery from Domestic Clays.**—Records for 1888 show shipments of pottery from Canadian plants valued at \$27,750; within the next four years the production had increased to nearly ten times that value. Production thereafter varied but remained above the \$100,000 mark each year up to the end of 1911. From 1912 to 1916, values ranged between \$35,371 and \$61,069. During the following years a considerable improvement was shown in annual sales and in 1926 a record valuation of \$320,135 was set up.

Four plants with total assets of \$310,043, were engaged primarily in the production of stoneware and pottery from Canadian clays in 1926. Employees in the industry totalled 149 persons whose earnings were \$130,254.

In New Brunswick, a plant at St. John produces stoneware, Rockingham ware and flower pots from Canadian clay. Flower pots are produced from local clays at Toronto and Hamilton, Ontario. Rockingham ware and flower pots are produced at Medicine Hat, Alberta.

**Fire Clay.**—Clays from the Drummond colliery at Westville, Nova Scotia, and from Flower Cove, New Brunswick, are used for the manufacture of refractory products.

In Quebec, the discoloured portions of the kaolin found at St. Remi d'Amherst can be utilized as a fire clay.

In the valleys of the Abitibi, Mattagami and Missinaibi rivers, which flow northward on the James Bay slope, in Ontario, the occurrence of residual deposits of refractory clays has been known for many years. The extension of the Temiskaming and Northern Ontario Railway from Cochrane to Oil Can Portage on the Abitibi river has brought an important deposit within 30 miles of shipping facilities.

In Manitoba, semi-refractory shale is found in Turtle Mountain, at La Riviere and near Virden in the Assiniboine valley.

Refractory and semi-refractory clays occur in southern Saskatchewan. At Claybank, in the Dirt hills, south of Moose Jaw, standard fire brick, special shapes and face brick are made from local clays. Similar clays are found near Michellton at Willows, south of Twelve Mile lake and along the Frenchman river valley in the Cypress hills.

Along the Athabaska river near Fort McMurray, refractory and semi-refractory clays are found associated with the tar sands.

A very important deposit of fire clay occurs in Sumas mountain, about 40 miles eastward from Vancouver, British Columbia; at Clayburn, refractory products are made from this clay. Refractory shales also occur near Whonnock and a residual fire clay deposit at Kyuquot, Vancouver island, is operated; the clay is shipped to Victoria for the manufacture of stove linings and sewer pipe.

In 1889, the first production of fire clay in Canada was recorded, namely, 400 tons valued at \$4,800. The maximum production for the industry, in point of tonnage, was reached in 1917 when 10,534 tons were shipped. During 1926, total shipments from Nova Scotia, New Brunswick, Saskatchewan and British Columbia amounted to 2,513 tons valued at \$23,258. Imports of fire clay into Canada in 1926 totalled 46,874 tons evaluated at \$193,741.

**Fire Brick.**—Fire brick production in Canada from domestic clays reached its highest point in 1917 when 8,192,000 were produced with an average selling value of \$24.31 per thousand. Although sales have been smaller during the following years, higher prices prevailed and thus the 1917 aggregate valuation has been exceeded annually. During 1926, Nova Scotia, New Brunswick, Saskatchewan and British Columbia plants shipped 4,195,000 fire brick valued at \$192,276.

**Fire Clay Blocks and Shapes.**—Plants in Nova Scotia, Saskatchewan, and British Columbia produce special fire clay blocks and shapes from domestic clays. In 1907 the output of this class of refractory products was valued at \$18,000. Production increased until in 1918 a record for the industry was set up when shipments to a value of \$111,589 were made. The 1926 production had a sales value of \$54,064.

Three plants in Canada, located at Montreal, St. Johns, and Toronto, produce special refractory blocks and shapes from imported clays. In 1926, these plants shipped special refractory products worth \$323,168.

#### PRINCE EDWARD ISLAND

Red clay found at Richmond is exceptionally plastic, excellent for wheel work, built pottery, or for casting; it burns to a hard body of fine red colour that takes glazes well.

In 1886 eight brick plants and one tile plant operating in this province, shipped products valued at \$13,120. In the following year, production declined to \$9,145 as only 6 brick plants were active. A further decline was recorded in 1888 when the 4 active plants shipped products worth \$9,900.

In recent years, only one plant has been in operation in this province and the annual production has been small.

#### NOVA SCOTIA

Deposits of brick clays that can be used on the potters' wheels as they come from the bank are located at Avonport, Middleton, Bridgetown, Annapolis, Shubenacadie and Elmsdale. Stoneware clays are found at Middle Musquodoboit and Shubenacadie.

Records for 1871 show 39 brick and tile plants in operation in Nova Scotia. Wages paid in these plants in that year amounted to \$18,481 and the value of products totalled \$34,138. Ten years later 41 plants were active; wages paid increased to \$26,790 and production value advanced to \$64,775. In 1920, the value of clay products shipped by Nova Scotia operators was \$541,114; the maximum production for this province. Common and pressed brick, hollow building blocks, refractories, sewerpipe, and drain tile comprised this year's production.

Eleven clay products plants with a capital investment of \$1,788,529, were operated in 1921. There were 231 employees on the pay-rolls during the year and these were paid \$164,709. During 1926 ten plants were active with a production valued at \$362,667; employment was furnished to 203 persons whose earnings totalled \$142,035.

#### NEW BRUNSWICK

In New Brunswick, red brick clays suitable for the manufacture of coloured earthenware, without much preparation are found near St. John, Albert Mines and Bathurst. The coal measures of the Grande Lake district furnish certain clay beds suitable for stoneware, pottery and saggars.

Mine brick and tile plants were operated in New Brunswick in 1871 and products shipped were valued at \$19,960. Wages paid to the 85 men employed totalled \$9,193. According to statistics for 1881 the New Brunswick production from the 14 active plants was worth \$43,650; there were 188 men employed in these plants to whom wages totalling \$19,161 were paid. Production during the ensuing years did not vary greatly, but the record period for the industry was not reached until 1926 when the value of common brick, fire brick and fire clay and pottery shipped was \$75,851.

In 1921 four brick and tile plants and one stoneware and pottery plant were active; a total capital employment in these plants of \$106,299 was recorded. Salaried officers and wage-earners employed during the year numbered 70 who received \$40,961, while products sold were valued at \$66,600. Capital invested in the 3 plants in operation during 1926 was \$120,645; employees numbered 65; and salaries and wages, \$39,048.

#### QUEBEC

Clays of Pleistocene age are found abundantly in the St. Lawrence and St. John valleys and in the clay belt of northern Quebec. The clays in the St. Lawrence valley are very uniform in composition and burn to a red colour. These clays enter into the manufacture of cement, brick, drain tile, structural tile and sewer pipe. Vitrified sewer pipe is made at St. John by mixing these local clays with imported New Jersey fire clay. At Laprairie, Utica-Lorraine shales are used by the largest producer in the province. A deposit of varied stratified clay at L'Islet station supplies raw material for the manufacture of brick and tile. Brick plants at Deschailions obtain their raw material locally from a large bed of stratified clay.

Kaolin or china clay is found at St. Remi-d'Amherst, about 70 miles northwest of Montreal. This deposit was not operated commercially until 1912, and four years later the maximum production of 1,750 tons was shipped. Washed kaolin for use as a paper filler and quartz sand have been shipped from this property. The deposit was not operated during 1924, 1925 and 1926.

The clay products industry in Quebec has shown a very substantial growth since its inception. Records for 1871 refer to the operation of 69 brick and tile plants in this province. These plants shipped products valued at \$293,233 and employed 791 persons to whom \$142,182 were paid in wages. A glance at the next decennial census figures reveals 78 active plants, producing brick and tile with a selling value of \$387,924. In 1891 production rose to a value of \$500,957. The record valuation of \$1,680,400 was set up in 1912 and it was not exceeded until 1920, when the plants in this industry shipped products worth \$2,376,029. A recession was noted in the following year; but, during the period 1923-1925 the annual production value was approximately 2-4 million dollars. The high mark for the industry was reached in 1926 when shipments had an aggregate value of \$2,702,298. Capital employed in the 20 plants operating was \$9,834,756 and employees totalled 948, who received \$974,753 in salaries and wages.

#### ONTARIO

Ontario clay deposits are classed broadly as follows: (1) Residual, i.e., being found where they were formed, as from weathering of feldspar, which includes all white-burning clays and also a few red-burning clays. (2) Transported, which includes practically all the clays in Ontario, as formed by the agencies of wind, water or glaciers,—the last two being of greatest importance.

Transported clays are again classed as of (a) Marine derivation, i.e., shales and fire clays; (b) Lacustrine deposits laid down in lakes, giving the same general types as in the marine clays; (c) Flood plains as in Mississippi valley but rare in Ontario; (d) Deltas; and (e) Glacial clays. The last mentioned class of deposit is particularly important in this province. Examples of interglacial clays may be seen in the Don Valley deposit at Toronto, where brick of a wide range of colours is produced from clays and underlying shales.

Deposits of clay suitable for the manufacture of brick, tile, sewerpipe and flower pots are widely distributed throughout Ontario. The greatest development of these deposits is in and surrounding the densely populated areas: Toronto and Hamilton and their environs being the principal centres of activity, although in 1926 plants were in operation in every county in the southwestern peninsula except Dufferin. In recent years, the use of shale in the making of brick has been extensive, principally in plants at Toronto, Cooksville, Streetsville and Milton. Drain tile, hollow building tile, floor and roofing tile are also produced in Ontario. Domestic clays are used at Hamilton and Toronto for the production of flower pots. Three plants located at Hamilton, Mimico and Swansea produce sewerpipe from a special clay obtained at Aldershot, near Hamilton.

Census data for 1871 show 309 brick and tile plants in operation in Ontario; these plants employed 1,939 persons, whose earnings totalled \$229,842 and the value of the year's production was \$577,904. Returns for the next decennial census showed 400 active plants with an output valued at \$971,158. Employment was furnished during that year to 2,768 workers who received \$405,311. During 1886, there were 188 brick producers whose sales totalled \$631,892, and 74 tile producers who shipped commodities worth \$139,307. Production of clay products during the period 1906-1914 inclusive ranged between 2.4 million dollars and 5.2 million dollars; however, the war period recorded a falling-off to an annual average of 2.3 million dollars. The peak for this industry in point of production value was reached in 1922 when sales amounted to \$6,944,218. Active plants during that year numbered 155, with a total capital investment of \$14,363,332, and a payroll of \$2,808,597 earned by 2,656 employees.

Operations were carried on in 133 plants in Ontario during 1926; shipments from these plants had an aggregate value of \$5,356,469. Capital actually employed by the active firms was \$13,149,974 or 46.7 per cent of the total investment in this industry in Canada. The number of employees engaged in the production of clay products in Ontario was 2,171 to whom a total remuneration of \$2,315,938 was paid.

#### MANITOBA

Surface clays and the older shales and clays provide raw material for the manufacture of brick and tile in Manitoba. Only the former clays are used by the plants operating at the present time. During the period 1908-1912 shale was used in the manufacture of pressed brick, hollow tile and sewer pipe.

Prior to 1913, Manitoba's output consisted principally of common soft mud brick and the demand for face brick was supplied by importations. The contrary has been the case since that time as the manufacture of face brick became an important branch of the industry in the province. At Winnipeg the Alsip plant produces stiff mud face brick and at Sidney there is a plant equipped to produce face brick and building tile. Structural tile and drain tile are produced at the stiff mud process plants in Manitoba.

During 1886, four brick plants were operated in Manitoba and shipped products valued at \$14,475. The high mark for the industry was reached in 1912, when 21 active plants made shipments of brick (common and pressed) and drain tile worth \$1,018,051. Employment was furnished during that year to 1,088 men in this industry whose earnings totalled \$405,926. In 1926, the capital invested in the 6 operating plants was \$233,592. Wages paid to the 171 persons on the pay-rolls amounted to \$115,070, and the value of the clay products shipped during the year was \$248,497.

## SASKATCHEWAN

White and grey clays varying from low grade stoneware clays to fire clays are found in the southern part of Saskatchewan. Clay for the manufacture of pottery and sewer pipe is shipped from deposits at East End and Willows to Medicine Hat, Alberta. A plant at Claybank south of Moose Jaw uses fire clay obtained from local deposits for the manufacture of refractory products. At Bruno, Saskatoon and Prince Albert, plants produce face, common and hollow building brick from local clays.

The banner construction year, 1912, established a record for the production of clay products in Saskatchewan. Common and pressed brick shipped during that year amounted to 30,539,000 valued at \$332,943. There were 14 plants active in 1912; the average number of men employed was 383 and the total wages \$152,654.

The 1926 production was valued at \$214,113 and was made up of shipments from 7 plants, employing 161 men who received \$88,445 in wages.

## ALBERTA

Natural gas is used extensively in the plants located at Medicine Hat and Redcliff; the Medalta Potteries Ltd. and the Alberta Clay Products Co. at Medicine Hat use this fuel. Near Redcliff the clays are obtained by mining and are very difficult to dry and burn, but the advantage of having cheap fuel at hand enables the operators to produce brick at reasonable costs. Building brick (face and common, stiff mud process and dry press) is produced at Cannell, Riverdale and Redcliff. Hollow building block, drain tile, sewer pipe and certain refractory products are manufactured at Medicine Hat.

Alberta in common with the other western provinces set up a high record for the production of clay products in 1912; the value of building brick, fireproofing brick and blocks, and drain tile shipped was \$1,356,184.

In 1920, the 11 Alberta plants operating employed 428 men who earned \$496,669 and the total production was valued at \$786,430 or 7.37 per cent of the Dominion total for this group. The following year 414 employees were on the payrolls and their earnings amounted to \$427,124 while the value of products sold was \$710,477. During 1921 the capital actually employed in the operation of these clay products plants reached a total of \$2,268,645. Production during the succeeding four years declined considerably, but in 1926 a renewal of building activity resulted in an advance to a value of \$804,933, the high mark for the industry in this province. A capital investment of \$1,983,371 was reported by the 9 plants active during the year and employment was furnished 346 persons whose earnings were \$361,824.

## BRITISH COLUMBIA

Five brick plants were in operation in British Columbia during 1886 producing brick with a total valuation of \$41,150. The expansion of the clay products industry in this province may be seen upon an examination of statistics for 1912, a record year when plants were operated at Vancouver, New Westminster, Clayburn, Cloverdale, Bazan Bay, Pender Island, Port Haney, Anvil Island, Victoria and Sydney. In all, 28 plants were active during the year shipping products worth \$996,568 and employing 814 men who received wages totalling \$492,916. Building brick, paving brick, fire brick, fireproofing brick and blocks, sewer pipe and drain tile were produced. In 1920 British Columbia contributed 5.59 per cent of the total Canadian production of clay products; shipments were valued at \$596,172. Nine plants were active during that year; their capital investment amounted to \$885,903, and their pay-rolls showed 247 men employed at a total remuneration of \$303,160. A falling-off in production was recorded during the ensuing

four years but in 1926 sales rose to a total valuation of \$592,495. There were 12 plants in operation in 1926 with an aggregate capital actually employed of \$1,030,656 and employees numbering 330 were paid \$309,574.

A shipment of 30 tons of bentonite valued at \$150 was made in 1926 from Princeton. During the same year development work was done near Williams lake on a deposit of a refractory material known locally as kaolin but described merely as "silicate of alumina" by the Provincial Mineralogist; 129 tons valued at \$1,900 were produced. This material was shipped to Vancouver where some was used in the manufacture of plastic firebrick and refractory cements, and some directly as fire clay.

Tables 446 to 469 refer only to the 'production of clay products from domestic clays and Tables 470 to 474 relate to the production from imported clays.

Table 446.—Production of Clay Products in Canada from Domestic Clays by Provinces, 1886–1926

Year	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1886.....	13,120	50,630	33,218	83,025	881,039	14,475	9,400		41,150	1,126,057
1887.....	9,145	43,746	46,541	80,117	1,187,453	8,125	4,300		19,480	1,398,907
1888.....	9,900	56,995	34,364	223,161	1,123,671	2,400	1,650		42,532	1,494,673
1889.....	6,504		93,425	278,845	1,182,397	19,636	9,210		62,317	1,652,334
1890.....	11,775	60,520	70,430	458,597	1,347,278	15,300	10,000		67,201	2,041,101
1891.....	8,220	54,755	47,071	500,957	1,076,154	13,300	23,000		79,475	1,802,932
1892.....	6,536	93,611	52,853	489,470	1,313,877	67,450	24,937		129,234	2,177,968
1893*.....										2,619,590
1894*.....										2,560,236
1895*.....										2,487,248
1896*.....										2,227,962
1897*.....										2,325,903
1898.....	†	173,280	113,400	820,758	1,449,536	34,000			100,000	2,690,974
1899.....	†	110,695	85,600	828,868	1,828,936	25,000			109,000	2,988,099
1900.....	†	108,210	80,920	866,060	2,009,915	25,000			105,000	3,195,105
1901.....	†	103,695	50,229	884,166	2,222,620	20,000			101,996	3,382,706
1902.....	†	152,025	150,945	946,755	2,149,451		150,000		76,313	3,625,489
1903.....	†	150,100	150,675	1,028,246	2,402,520		150,000		152,748	4,034,289
1904.....	†	157,762	150,830	917,894	2,306,200		150,000		158,874	3,841,560
1905.....	†	90,146	45,010	896,000	2,696,500	588,735	103,278	191,287	98,886	4,709,842
1906.....		160,506	49,220	769,458	3,136,870	517,065	136,022	180,217	123,277	5,072,635
1907.....		125,560	57,377	1,214,108	3,123,372	466,432	125,459	353,672	306,137	5,772,117
1908.....		117,833	75,513	893,717	2,476,152	265,091	87,566	240,384	344,446	4,500,702
1909.....		188,185	65,570	1,153,832	3,425,841	559,008	145,516	442,486	470,402	6,450,840
1910.....		204,782	56,475	1,442,842	3,667,810	781,605	160,850	753,232	562,360	7,629,956
1911.....		274,249	38,000	1,341,467	3,916,575	834,428	226,958	1,052,751	675,605	8,359,933
1912.....		272,053	54,910	1,680,460	4,864,700	1,018,051	332,943	1,356,184	996,568	10,575,869
1913.....		332,272	62,269	1,606,816	5,220,467	514,358	189,820	893,408	684,904	9,504,314
1914.....		266,204	66,502	1,267,700	3,979,606	317,488	98,349	462,199	413,009	6,871,957
1915.....		221,881	35,780	918,425	2,254,863	93,674	44,406	115,696	229,763	3,914,488
1916.....		238,470	42,881	993,664	2,145,036	104,248	78,668	225,140	292,698	4,120,805
1917.....		331,542	51,304	983,310	2,575,304	114,651	78,251	309,091	334,685	4,779,038
1918.....		303,515	39,055	817,357	2,434,215	116,417	133,935	381,074	357,921	4,583,489
1919.....		432,900	52,941	1,577,576	4,574,796	131,737	270,989	571,949	293,478	7,906,366
1920.....		541,114	73,484	2,376,029	5,613,488	206,764	471,448	786,430	596,172	10,664,929
1921.....		361,761	66,600	1,744,760	5,183,125	208,982	166,244	710,477	415,869	8,867,818
1922.....	3,975	427,643	75,425	2,494,236	6,944,218	210,740	134,704	700,063	447,452	11,438,456
1923.....		413,974	62,587	2,439,598	6,270,615	160,134	119,405	590,565	426,138	10,483,016
1924.....	3,340	355,948	74,994	2,435,695	5,089,299	117,450	137,280	540,477	460,594	9,215,077
1925.....	3,020	422,690	69,473	2,426,887	5,195,084	173,794	95,952	618,860	523,931	9,529,691
1926.....		362,667	75,851	2,702,298	5,356,469	248,497	214,113	804,933	592,495	10,357,323
Total.....										212,971,794

\*Data by provinces not available.

†Included with Nova Scotia.

Table 447.—Production of Clay Products in Canada, from Domestic Clays, by Provinces, 1924-1926

Province	1924		1925		1926	
	Sold or used	Per cent of total value	Sold or used	Per cent of total value	Sold or used	Per cent of total value
	\$		\$		\$	
Prince Edward Island.....	3,340	0.04	3,020	0.03	362,667	3.50
Nova Scotia.....	355,948	3.86	422,690	4.43	75,851	0.73
New Brunswick.....	74,994	0.81	69,473	0.72	2,702,298	26.09
Quebec.....	2,435,695	26.44	2,426,887	25.46	5,356,469	51.72
Ontario.....	5,089,299	55.24	5,195,084	54.51	248,497	2.40
Manitoba.....	117,450	1.27	173,794	1.82	214,113	2.07
Saskatchewan.....	137,280	1.49	95,952	1.06	804,933	7.77
Alberta.....	540,477	5.86	618,860	6.49	592,495	5.72
British Columbia.....	460,594	4.99	523,931	5.48		
<b>Canada.....</b>	<b>9,215,077</b>	<b>100.00</b>	<b>9,529,691</b>	<b>100.00</b>	<b>10,357,323</b>	<b>100.00</b>

Table 448.—Value of Clay Products Produced in Canada from Domestic and from Imported Clays, 1925 and 1926

Item	From domestic clays		From imported clays		Total	
	1925	1926	1925	1926	1925	1926
	\$	\$	\$	\$	\$	\$
Fire clay blocks and shapes.....	36,567	54,064	157,911	323,168	194,478	377,232
Sanitary ware.....			240,501	351,125	240,501	351,125
Ceramic or glazed floor and wall tile.....			110,059	135,942	110,059	135,942
Pottery, glazed and unglazed.....	267,255	320,135	55,305	34,890	322,560	355,025
Electrical porcelain insulators.....			973,328	1,027,280	973,328	1,027,280
Other clay products (brick, tile, sewer pipe, etc.).....	9,225,869	9,983,124	204,641	167,109	9,430,510	10,150,233
<b>Total.....</b>	<b>9,529,691</b>	<b>10,357,323</b>	<b>1,741,745</b>	<b>2,039,514</b>	<b>11,271,436</b>	<b>12,396,837</b>

Table 449.—Production in Canada, Imports and Exports of Clay and Clay Products,  
1924-1926

Kind	1924		1925		1926	
	Quantity	Total selling value	Quantity	Total selling value	Quantity	Total selling value
		\$		\$		\$
<b>PRODUCTION—</b>						
Brick: Soft mud process (Face..... M	10,831	185,248	27,701	521,739	28,235	556,573
Common..... M	50,079	746,044	51,214	753,970	78,158	1,145,490
Stiff mud process (Face..... M	80,565	1,842,224	93,903	1,883,856	101,028	2,146,362
(wire cut) Common..... M	124,556	1,880,631	116,105	1,635,257	94,046	1,624,035
Dry press (Face..... M	35,203	761,572	37,201	800,504	30,423	651,236
Common..... M	12,794	168,043	22,053	270,135	19,450	260,598
Fancy or ornamental brick (including special shapes, embossed and enamelled brick)..... M	755	98,460	524	26,320	462	24,057
Sewer brick..... M	2,690	40,775	2,485	52,382	6,546	117,194
Paving brick..... M					122	5,015
Fire brick from domestic clay	4,327	209,256	6,197	305,332	4,195	192,276
Fire clay..... tons	3,645	26,258	623	6,544	2,513	23,258
Fire clay blocks and shapes.....		51,273		36,567		54,064
Structural tile: Hollow blocks (including fireproofing and load-bearing tile)..... tons	96,818	926,777	115,576	1,093,397	142,061	1,314,650
Roofing tile..... No.	7,377	917	78,479	6,323	17,018	1,562
Floor tile (quarries) Sq. ft.	444,601	35,608	140,927	28,338	195,011	43,854
Drain tile..... M	15,137	409,369	14,552	401,503	14,258	396,018
Sewer pipe (including copings, flue linings, etc.)..... tons	76,355	1,594,280	73,791	1,440,269	75,996	1,480,776
Pottery, glazed or unglazed.....		238,342		267,255		320,135
Other products—Bentonite..... tons					30	150
<b>Total.....</b>		<b>9,215,077</b>		<b>9,529,691</b>		<b>10,357,323</b>
<b>IMPORTS—</b>						
Bath brick.....		1,799		695		97
Building brick..... M	5,425	124,983	5,489	125,565	4,157	93,337
Building blocks.....		63,559		81,873		77,230
Clays.....						
China..... cwt.	390,613	250,113	363,890	195,032	360,546	200,902
Fire..... cwt.	886,091	186,696	824,774	166,733	937,487	193,741
Pipe.....		847		1,668		1,323
Zirconium silicate.....		56,590		64,498		2,704
Other clays.....		3,014		8,622		81,253
Drain tile, unglazed.....		68,449		66,960		2,547
Drain and sewer pipe.....						65,487
Insulators, electric, porcelain.....		4,124,607		4,558,194		305,774
Earthenware and chinaware.....						4,647,395
Brick, fire, other, valued at not less than \$100 per M, rectangular shaped: the dimensions of each not to exceed 125 cubic inches for use exclusively in the construction or repair of a furnace, kiln, etc.....		23,413		27,113		41,690
Brick, fire, n.o.p., for use exclusively in the construction or repair of a furnace, kiln or other equipment of a manufacturing establishment.....		812,039		861,696		1,023,850
Fire brick, n.o.p.....		284,388		194,060		156,781
Fire brick, chrome.....				35,277		50,203
Magnesite brick.....		91,553		93,840		66,420
Silica brick.....		154,251		185,356		263,293
Paving brick..... M	2,559	69,493	1,563	39,901	2,678	72,989
Other clay manufactures.....		842,577		771,001		848,989
<b>Total.....</b>		<b>7,158,371</b>		<b>7,478,084</b>		<b>8,196,014</b>
<b>EXPORTS—</b>						
Building brick..... M	2,988	38,105	1,758	22,027	1,845	25,908
Clay—						
Unmanufactured..... cwt.	1,346	1,127	7,325	8,496	14,537	3,898
Manufactures.....		109,295		85,383		61,523
Earthenware.....		72,839		16,879		12,764
Porcelain insulators.....		322,206		88,033		120,823
<b>Total.....</b>		<b>543,572</b>		<b>220,818</b>		<b>224,916</b>

Table 450.—Production of Building Brick in Canada by Provinces, 1924-1926

		Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Colum- bia	*Canada
1924										
Soft mud process.	Face.....M				10,605		226			10,831
	\$				182,385		2,863			185,248
	Common..M	440	2,345	4,802	31,041	5,722	1,003	1,446	2,565	50,079
	\$	5,880	38,131	48,805	488,742	93,698	20,473	19,195	29,470	746,044
Stiff mud process. (wire cut)	Face.....M	675		14,611	63,353	165	1,200	213	348	80,565
	\$	13,581		381,549	1,385,151	4,911	32,210	5,736	19,108	1,842,224
	Common..M	4,161		93,343	22,563	127	227	3,502	633	124,556
	\$	60,322		1,351,657	424,536	1,270	3,570	38,823	10,453	1,880,631
Dry press	Face.....M			1,817	30,597		173	1,488	1,130	35,203
	\$			53,006	636,101		6,064	25,824	40,577	761,572
	Common..M				2,433		128	7,510	2,723	12,794
	\$				34,093		2,018	96,533	35,399	165,043
Fancy or ornamental brick.....M	\$			223	532					755
Sewer brick.....M	\$			9,603	88,857					98,460
	\$				2,656				34	2,690
	\$				39,446				1,329	40,775
<b>Total.....M</b>	<b>\$</b>	<b>5,276</b>	<b>2,345</b>	<b>114,796</b>	<b>163,780</b>	<b>6,014</b>	<b>3,557</b>	<b>14,157</b>	<b>7,433</b>	<b>317,473</b>
		<b>69,783</b>	<b>38,131</b>	<b>1,844,680</b>	<b>3,279,291</b>	<b>99,379</b>	<b>67,198</b>	<b>186,111</b>	<b>136,334</b>	<b>5,722,997</b>
1925										
Soft mud process.	Face.....M			3	24,479	3,219				27,701
	\$			35	476,638	45,066				521,739
	Common..M	830	2,000	7,740	30,799	6,014	662		3,169	51,214
	\$	10,760	30,000	80,114	474,114	96,632	9,951		52,399	753,970
Stiff mud process (wire cut)	Face.....M	1,435		21,224	68,975	324	560	852	533	93,903
	\$	29,180		506,113	1,288,382	8,404	17,104	17,963	16,710	1,883,856
	Common..M	3,658		93,827	12,642	29	465	5,036	268	116,105
	\$	45,475		1,328,403	195,202	283	6,531	52,645	4,198	1,635,257
Dry press	Face.....M			2,919	32,016		77	922	1,267	37,201
	\$			91,551	638,812		2,634	16,525	50,982	800,504
	Common..M		250	800	4,587			11,930	4,486	22,053
	\$		2,800	7,200	64,377			137,436	58,322	270,135
Fancy or ornamental brick.....M	\$			98	426					524
Sewer brick.....M	\$			4,592	21,728					26,320
	\$				2,125				360	2,485
	\$				37,082				15,300	52,382
<b>Total.....M</b>	<b>\$</b>	<b>5,923</b>	<b>2,250</b>	<b>126,611</b>	<b>176,049</b>	<b>9,586</b>	<b>1,764</b>	<b>18,740</b>	<b>10,083</b>	<b>351,186</b>
		<b>85,415</b>	<b>32,800</b>	<b>2,018,008</b>	<b>3,196,335</b>	<b>150,385</b>	<b>36,220</b>	<b>224,569</b>	<b>197,911</b>	<b>5,944,163</b>
1926										
Soft mud process.	Face.....M	10		7,836	20,389					28,235
	\$	200		196,829	359,544					556,573
	Common..M	826		25,833	35,474	9,775	765	2,022	3,463	78,158
	\$	10,670		365,405	522,803	159,350	11,240	24,458	51,564	1,145,490
Stiff mud process (wire cut)	Face.....M	1,262		17,156	76,078	3,181	1,252	951	1,148	101,028
	\$	25,139		442,738	1,537,450	45,778	35,365	21,111	38,781	2,146,362
	Common..M	3,845	2,372	68,131	12,110	105	2,728	4,271	484	94,046
	\$	50,002	34,258	1,247,875	206,242	1,050	31,428	45,208	7,992	1,624,055
Dry press	Face.....M				26,462		593	2,070	1,298	30,423
	\$				539,854		21,422	39,064	50,896	651,236
	Common..M				3,055		159	13,236	3,000	19,450
	\$				39,689		2,138	164,771	54,000	260,598
Fancy or ornamental brick.....M	\$			88	374					462
Sewer brick.....M	\$			4,010	20,047					24,057
	\$				6,397				149	6,546
	\$				111,620				5,574	117,194
<b>Total.....M</b>	<b>\$</b>	<b>5,943</b>	<b>2,372</b>	<b>119,044</b>	<b>180,339</b>	<b>13,061</b>	<b>5,497</b>	<b>22,550</b>	<b>9,542</b>	<b>358,348</b>
		<b>86,011</b>	<b>34,258</b>	<b>2,256,857</b>	<b>3,337,249</b>	<b>206,178</b>	<b>101,593</b>	<b>291,612</b>	<b>208,807</b>	<b>6,525,565</b>

\*Totals for Canada for 1924 and 1925 include data for Prince Edward Island.

Table 451.—Production of Building Brick (Common and Pressed) in Canada, 1886-1923

Year	Common and Pressed*		Year	Common		Pressed		Total	
	Quantity	Value		Quantity	Value	Quantity	Value	Quantity	Value
	M	\$		M	\$	M	\$	M	\$
1886.....		873,600	1907.....	439,016	3,455,524	78,922	794,722	517,938	4,250,246
1887.....		986,689	1908.....	353,261	2,611,554	53,481	517,180	406,742	3,128,734
1888.....		1,036,746	1909.....	539,229	4,212,424	57,265	630,677	596,494	4,843,101
1889.....		1,273,884	1910.....	627,715	5,105,354	67,895	807,294	695,610	5,912,648
1890.....		1,266,982	1911.....	645,551	5,420,890	87,351	1,094,582	732,902	6,515,472
1891.....		1,061,536	1912.....	769,192	7,010,375	125,180	1,609,854	894,372	8,620,229
1892.....		1,251,934	1913.....	668,427	5,917,373	116,802	1,458,733	785,229	7,376,106
1893.....		1,800,000	1914.....	457,514	3,653,861	93,635	1,115,556	551,149	4,769,417
1894.....		1,800,000	1915.....	234,733	1,755,187	49,817	492,774	284,550	2,247,961
1895.....		1,670,000	1916.....	237,035	1,826,844	44,947	492,355	281,982	2,319,199
1896.....		1,600,000	1917.....	210,631	1,999,465	46,409	653,153	257,042	2,652,618
1897.....		1,600,000	1918.....	164,970	1,879,811	40,147	639,083	205,117	2,518,894
1898.....		1,900,000	1919.....	291,470	3,850,219	74,424	1,304,162	365,894	5,154,381
1899.....		2,195,000	1920.....	303,343	4,835,996	85,137	2,004,537	388,480	6,840,533
1900.....		2,275,000	1921.....	220,438	3,567,503	80,947	1,738,293	301,385	5,305,796
1901.....		2,400,000	1922.....	294,919	4,714,658	90,578	1,839,549	385,497	6,554,267
1902.....		2,593,000	1923.....	250,565	3,884,474	73,400	1,461,483	323,965	5,345,957
1903.....		2,832,000							
1904.....		2,983,000	<b>Total.....</b>						<b>125,791,385</b>
1905.....	523,820	3,933,925							
1906.....	523,390	4,102,590							

\* Separate statistics not available till 1907.

Table 452.—Production of Paving Brick\* in Canada, 1897-1926

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	M	\$		M	\$		M	\$
1897.....	4,568	45,670	1905.....	4,500	54,000	1914.....	2,707	49,627
1898.....			1906.....	3,000	45,000	1915.....	1,228	20,694
1899.....	5,300	42,550	1907.....	3,618	72,354	1916.....	1,590	30,144
1900.....	2,710	26,950	1908.....	3,720	59,456	1917-1921.....		
1901.....	3,689	37,000	1909.....	3,760	67,408	1922.....	151	5,972
1902.....	4,211	42,000	1910.....	4,215	78,980	1923-1925.....		
1903.....	3,789	45,288	1911.....	5,220	79,444	1926.....	122	5,015
1904.....	4,436	55,450	1912.....	4,580	85,989			
			1913.....	4,208	75,669	<b>Total.....</b>	<b>71,322</b>	<b>1,024,660</b>

\*Figures prior to 1907 compiled by the *Ontario Bureau of Mines*.

Table 453.—Production of Structural Tile in Canada, by Provinces, 1925 and 1926

Province	Hollow blocks (including fireproofing and load-bearing tile)		Roofing tile		Floor tile (quarries)	
	Tons	Value	No.	Value	Sq. ft.	Value
<b>1925</b>		\$		\$		\$
Nova Scotia.....	6,706	67,863				
Quebec.....	31,842	302,272				
Ontario.....	62,926	577,477	78,479	6,323	140,927	28,338
Manitoba.....	610	9,329				
Saskatchewan.....	2,700	27,052				
Alberta.....	5,166	49,831				
British Columbia.....	5,626	59,573				
<b>Canada.....</b>	<b>115,576</b>	<b>1,093,397</b>	<b>78,479</b>	<b>6,323</b>	<b>140,927</b>	<b>28,338</b>
<b>1926</b>						
Nova Scotia.....	5,141	60,615				
Quebec.....	33,627	281,342				
Ontario.....	76,794	710,595	17,018	1,562	195,011	43,854
Manitoba.....	2,511	29,132				
Saskatchewan.....	4,400	44,000				
Alberta.....	12,591	115,008				
British Columbia.....	6,997	73,958				
<b>Canada.....</b>	<b>142,061</b>	<b>1,314,650</b>	<b>17,018</b>	<b>1,562</b>	<b>195,011</b>	<b>43,854</b>

Table 454.—Production of Sewer Pipe in Canada, 1888-1926

Year	Value	Year	Value	Year	Tons	Value
	\$		\$			\$
1888.....	266,320	1902.....	301,965	1916.....		716,287
1889.....		1903.....	317,970	1917.....		783,762
1890.....	348,000	1904.....	440,894	1918.....	36,574	699,774
1891.....	227,300	1905.....	382,000	1919.....	62,821	1,074,146
1892.....	367,600	1906.....	530,045	1920.....	58,887	1,549,090
1893.....	350,000	1907.....	667,100	1921.....		1,666,584
1894.....	250,325	1908.....	514,362	1922.....	75,932	1,766,347
1895.....	257,045	1909.....	645,722	1923.....	70,252	1,616,324
1896.....	153,875	1910.....	774,110	1924.....	76,855	1,594,280
1897.....	164,250	1911.....	812,716	1925.....	73,791	1,440,269
1898.....	181,717	1912.....	884,641	1926.....	75,996	1,480,776
1899.....	161,546	1913.....	1,035,906			
1900.....	231,525	1914.....	1,104,499	<b>Total.....</b>		<b>26,806,693</b>
1901.....	248,115	1915.....	799,446			

\*Data not available.

Table 455.—Production of Drain Tile in Canada, 1891-1926

Year	Value	Year	Value	Year	Value	Year	Quantity	Value
	\$		\$		\$		M	\$
*1891.....	90,000	1900.....	225,000	1909.....	408,440	1918.....		499,340
1892.....	100,000	1901.....	250,000	1910.....	370,008	1919.....	20,078	616,510
1893.....	190,000	1902.....	250,000	1911.....	339,812	1920.....	14,527	562,652
*1894.....	280,000	1903.....	275,000	1912.....	357,862	1921.....		473,952
1895.....	210,000	1904.....	260,000	1913.....	338,552	1922.....	14,728	407,386
1896.....	225,000	1905.....	260,000	1914.....	366,340	1923.....	10,599	323,314
1897.....	225,000	1906.....	290,000	1915.....	355,296	1924.....	15,137	409,369
1898.....	225,000	1907.....	260,609	1916.....	359,387	1925.....	14,552	401,503
1899.....	225,000	1908.....	298,561	1917.....	434,708	1926.....	14,258	396,018
						<b>Total.....</b>		<b>11,559,619</b>

\*1891-1894 (inclusive), as reported by Ontario Bureau of Mines.

Table 456.—Production of Drain Tile and Sewer Pipe, in Canada, by Provinces, 1925 and 1926

Province	1925				1926			
	Drain tile		Sewer pipe		Drain tile		Sewer pipe	
	M	\$	Tons	\$	M	\$	Tons	\$
Prince Edward Island.....	22	500						
Nova Scotia.....	44	1,520	11,483	195,787	53	1,877	11,532	209,465
Quebec.....	50	1,906	4,251	104,701	224	10,145	6,311	153,954
Ontario.....	13,496	360,710	49,334	893,442	12,788	340,403	48,176	835,206
Manitoba.....	278	14,080			275	13,187		
Saskatchewan.....	20	1,000			20	600		
Alberta.....	84	3,373	6,985	191,257	132	3,955	7,140	197,225
British Columbia.....	558	18,414	1,738	55,082	766	25,851	2,837	84,926
<b>Canada.....</b>	<b>14,552</b>	<b>401,503</b>	<b>73,791</b>	<b>1,440,269</b>	<b>14,258</b>	<b>396,018</b>	<b>75,996</b>	<b>1,480,776</b>

Table 457.—Production of Pottery from Domestic Clays in Canada, 1888-1926

Year	Value	Year	Value	Year	Value	Year	Value
	\$		\$		\$		\$
1888.....	27,750	1898.....	214,675	1908.....	200,541	1918.....	130,242
1889.....	*	1899.....	185,000	1909.....	285,285	1919.....	185,474
1890.....	195,242	1900.....	200,000	1910.....	250,924	1920.....	209,171
1891.....	258,844	1901.....	200,000	1911.....	102,493	1921.....	231,262
1892.....	265,811	1902.....	200,000	1912.....	43,955	1922.....	266,391
1893.....	213,186	1903.....	200,000	1913.....	53,533	1923.....	229,547
1894.....	162,144	1904.....	140,000	1914.....	35,371	1924.....	238,342
1895.....	151,588	1905.....	120,000	1915.....	64,900	1925.....	267,255
1896.....	163,427	1906.....	150,000	1916.....	61,069	1926.....	320,135
1897.....	129,629	1907.....	253,809	1917.....	122,878		
						<b>Total.....</b>	<b>6,729,873</b>

\*Data not available.

Table 458.—Production of Kaolin in Canada, 1912-1926

Year	Tons	Value	Year	Tons	Value	Tons	Tons	Value
		\$			\$			\$
1912.....	20	160	1917.....	533	9,594	1922.....	1,197	17,866
1913.....	500	5,000	1918.....	863	19,299	1923.....	163	2,369
1914.....	1,000	10,000	1919.....	759	13,744	1924-1926.....		
1915.....	1,300	13,000	1920.....	683	15,022			
1916.....	1,750	17,500	1921.....	124	1,888	<b>Total.....</b>	<b>8,892</b>	<b>125,442</b>

Table 459.—Production of Fire Clay in Canada, 1889-1926

Year	Quantity	Value	Year	Quantity	Value	Year	Quantity	Value
	Tons	\$		Tons	\$		Tons	\$
1889.....	400	4,800	1902.....	2,741	4,283	1915.....	2,328	12,065
1890.....			1903.....	2,639	3,523	1916.....	9,206	30,767
1891.....	250	750	1904.....	5,972	17,466	1917.....	10,534	49,455
1892.....	1,991	4,467	1905.....	5,088	13,917	1918.....	8,732	44,351
1893.....	540	700	1906.....	6,559	18,522	1919.....	4,600	24,163
1894.....	539	2,167	1907.....			1920.....	8,321	44,091
1895.....	1,329	3,492	1908.....	1,984	8,121	1921.....	2,931	29,851
1896.....	842	1,805	1909.....	4,405	12,390	1922.....	10,196	55,185
1897.....	2,118	5,759	1910.....	1,425	5,863	1923.....	2,685	24,158
1898.....	670	1,680	1911.....	7,532	24,128	1924.....	3,645	26,258
1899.....	599	1,295	1912.....	6,307	24,343	1925.....	623	6,544
1900.....	1,245	4,130	1913.....	3,345	14,018	1926.....	2,513	23,258
1901.....	3,979	5,920	1914.....	2,171	12,875			
						<b>Total.....</b>	<b>130,984</b>	<b>566,560</b>

Table 460.—Production of Fire Brick and Other Fire Clay Products in Canada, from Domestic Clays, 1907-1926

Year	Fire brick		Other fire clay products	Year	Fire brick		Other fire clay products
	Quantity	Value	Value		Quantity	Value	Value
		M	\$			\$	M
1907.....	4,323	113,322	18,000	1917.....	8,192	199,171	77,885
1908.....	2,416	70,429	31,752	1918.....	7,192	248,884	111,589
1909.....	1,059	32,742	33,000	1919.....	5,610	268,756	96,435
1910.....	1,375	29,352	15,000	1920.....	7,293	375,230	54,792
1911.....	2,368	44,122	20,880	1921.....	4,502	242,462	91,685
1912.....	3,430	67,192	34,050	1922.....	6,705	251,776	67,588
1913.....	3,667	86,164	42,556	1923.....	6,122	295,037	81,345
1914.....	2,816	72,299	22,394	1924.....	4,327	209,256	51,273
1915.....	2,896	68,700	29,928	1925.....	6,197	305,332	36,567
1916.....	5,689	147,757	56,038	1926.....	4,195	192,276	54,064
Total.....					90,374	3,320,259	1,026,821

Table 461.—Production of Refractories, in Canada, from Domestic Clays, by Provinces, 1925 and 1926

Province	1925					1926				
	Fire clay		Fire brick		Fire clay blocks and shapes	Fire clay		Fire brick		Fire clay blocks and shapes
	Quantity	Value	Quantity	Value	Value	Quantity	Value	Quantity	Value	Value
	Tons	\$	M	\$	\$	Tons	\$	M	\$	\$
Nova Scotia.....	48	489	1,221	71,336	280	536	2,123	30	1,901	675
New Brunswick.....	49	1,956	30	768	.....	47	1,819	25	1,372	.....
Ontario.....	.....	.....	904	46,459	.....	.....	.....	.....	.....	.....
Saskatchewan.....	319	2,895	447	21,672	7,113	808	5,103	737	39,456	23,361
Alberta.....	.....	.....	58	2,524	.....	.....	.....	.....	.....	.....
British Columbia.....	207	1,204	3,537	162,573	29,174	1,122	14,213	3,403	149,547	30,028
Canada.....	623	6,544	6,197	305,332	36,567	2,513	23,258	4,195	192,276	54,064

Table 462.—Principal Statistics of the Clay Products Industry in Canada, 1922-1926

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	232	31,168,903	4,681	4,752,341	*1,969,092	2,487,710	11,438,456
1923.....	221	32,294,371	4,730	5,011,700	2,667,115	1,867,898	10,483,016
1924.....	210	29,810,994	4,120	4,041,318	1,879,094	(a)	9,215,077
1925.....	188	27,760,864	4,136	4,034,075	1,909,591	(a)	9,529,691
1926.....	200	28,152,062	4,395	4,346,687	2,080,054	(a)	10,357,323

\*Fuel only.  
(a) Data not available.

Table 463.—Principal Statistics of the Clay Products\* Industry in Canada, by Groups, 1925 and 1926

—	1925				1926			
	Brick and tile	Clay sewer pipe	Fire brick and fire clay	Stoneware and pottery	Brick and tile	Clay sewer pipe	Fire brick and fire clay	Stoneware and pottery
Number of active plants.....	173	5	6	4	184	5	5	4
Capital employed.....	\$ 22,410,450	2,810,782	2,114,738	424,894	23,034,976	3,026,076	1,780,967	310,043
Salaried employees.....	249	24	27	10	272	24	23	10
Salaries paid.....	\$ 464,207	78,842	74,680	13,064	511,369	82,161	66,513	13,614
Average number of wage-earners.....	3,154	358	193	121	3,372	383	165	139
Wages paid.....	\$ 2,703,719	382,685	200,239	116,639	2,956,683	415,351	182,958	116,640
Cost of fuel and electricity.....	\$ 1,565,341	240,038	88,552	15,660	1,761,516	227,456	75,544	15,538
Value of products sold or used.....	\$ 7,374,551	1,182,454	702,707	269,979	8,146,514	1,177,247	706,984	322,726

\*Not including kaolin and other clays.

Table 464.—Plants Reporting Shipments in the Clay Products Industry in Canada, by Provinces, 1926

Province	Number of plants in groups indicated					Total
	Brick and tile	Clay sewer pipe	Fire brick and fire clay	Stoneware and pottery	Kaolin and other clays	
Prince Edward Island.....						
Nova Scotia.....	6	1	2		1	10
New Brunswick.....	2			1		3
Quebec.....	18					20
Ontario.....	127	1	1	2		133
Manitoba.....	6					6
Saskatchewan.....	7					7
Alberta.....	7		1	1		9
British Columbia.....	11				1	12
<b>Canada.....</b>	<b>184</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>200</b>

Table 465.—Capital Employed in the Clay Products Industry in Canada, by Provinces, 1925 and 1926

Industry and Province	1925				1926			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings, plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
<b>BY INDUSTRIES—</b>	\$	\$	\$	\$	\$	\$	\$	\$
<i>Brick and tile—</i>								
Nova Scotia.....	549,806	12,632	15,975	578,413	291,216	38,629	61,891	391,736
New Brunswick.....	57,771	8,660	12,039	78,470	63,271	10,860	12,094	86,225
Quebec.....	7,792,573	602,669	280,233	8,675,475	8,003,408	626,444	394,508	9,024,360
Ontario.....	8,473,163	1,241,168	764,404	10,478,735	8,070,982	1,163,568	1,261,105	10,495,655
Manitoba.....	114,244	47,100	39,900	201,244	116,884	62,308	54,400	233,592
Saskatchewan.....	525,006	80,515	6,388	611,909	620,880	77,153	41,617	739,650
Alberta.....	657,777	109,684	47,944	815,405	835,652	123,572	73,878	1,033,102
British Columbia.....	785,862	125,676	59,261	970,799	838,399	121,075	71,182	1,030,656
Total for Canada.....	18,956,202	2,228,104	1,226,144	22,410,450	18,840,692	2,223,609	1,970,675	23,034,976
<i>Clay sewer pipe—</i>								
Total for Canada.....	2,040,019	456,159	314,604	2,810,782	2,356,077	355,813	314,186	3,026,076
<i>Fire brick and fire clay products—</i>								
Total for Canada.....	1,358,011	348,193	408,534	2,114,738	1,147,633	255,220	378,114	1,780,967
<i>Stoneware and pottery—</i>								
Total for Canada.....	173,031	79,622	172,241	424,894	171,829	60,990	77,224	310,043
<b>BY PROVINCES—</b>								
<i>Total for clay and clay products—</i>								
Nova Scotia.....	1,398,872	113,532	18,413	1,530,817	869,802	125,602	64,014	1,059,418
New Brunswick.....	70,746	26,838	18,329	115,913	75,700	23,127	21,818	120,645
Quebec.....	8,253,178	702,356	511,142	9,466,676	8,503,640	721,733	609,383	9,834,756
Ontario.....	10,273,421	1,680,208	1,120,385	13,074,014	10,150,773	1,406,165	1,593,036	13,149,974
Manitoba.....	114,244	47,100	39,900	201,244	116,884	62,308	54,400	233,592
Saskatchewan.....	525,006	80,515	6,388	611,909	620,880	77,153	41,617	739,650
Alberta.....	1,105,934	335,853	347,705	1,789,492	1,340,153	358,469	284,749	1,983,371
British Columbia.....	785,862	125,676	59,261	970,799	838,399	121,075	71,182	1,030,656
<b>Canada.....</b>	<b>22,527,263</b>	<b>3,112,078</b>	<b>2,121,523</b>	<b>27,760,864</b>	<b>22,516,231</b>	<b>2,895,632</b>	<b>2,740,199</b>	<b>28,152,062</b>

Table 466.—Employees, Salaries and Wages in the Clay Products Industry in Canada, by Provinces, 1925 and 1926

Province	Average number of employees			Salaries and wages		
	Salaried employees	Wage-earners	Total	Salaries	Wages	Total
1925				\$	\$	\$
Nova Scotia.....	9	189	198	24,885	116,313	141,198
New Brunswick.....	8	53	61	9,187	27,559	36,746
Quebec.....	64	836	900	117,297	799,243	916,540
Ontario.....	159	2,112	2,271	337,127	1,884,067	2,221,194
Manitoba.....	12	145	157	22,060	66,151	88,211
Saskatchewan.....	10	34	44	17,349	32,310	49,659
Alberta.....	29	263	292	63,975	248,726	312,701
British Columbia.....	19	194	213	38,913	228,913	267,826
<b>Canada.....</b>	<b>310</b>	<b>3,826</b>	<b>4,136</b>	<b>630,793</b>	<b>3,403,282</b>	<b>4,034,075</b>
1926						
Nova Scotia.....	10	193	203	28,100	113,935	142,035
New Brunswick.....	8	57	65	9,811	29,237	39,048
Quebec.....	68	880	948	132,301	842,452	974,753
Ontario.....	161	2,010	2,171	348,174	1,967,764	2,315,938
Manitoba.....	13	158	171	24,150	90,920	115,070
Saskatchewan.....	15	146	161	23,113	65,332	88,445
Alberta.....	31	315	346	64,866	296,958	361,824
British Columbia.....	23	307	330	43,142	266,432	309,574
<b>Canada.....</b>	<b>329</b>	<b>4,066</b>	<b>4,395</b>	<b>673,657</b>	<b>3,673,030</b>	<b>4,346,687</b>

Table 467.—Wage-Earners in the Clay Products Industry in Canada, by Months and by Industries, 1926

Month	Brick and tile	Clay sewer pipe	Fire brick and fire clay	Stoneware and pottery	Kaolin and other clays	Total
January.....	1,326	367	109	134	.....	1,936
February.....	1,351	370	105	137	.....	1,963
March.....	1,921	372	159	139	.....	2,591
April.....	2,521	347	171	140	.....	3,179
May.....	3,517	362	169	140	.....	4,188
June.....	4,018	381	162	134	.....	4,695
July.....	3,998	391	164	133	.....	4,686
August.....	3,810	391	165	139	.....	4,505
September.....	3,232	404	162	145	7	3,950
October.....	3,071	400	163	149	7	3,790
November.....	2,556	407	168	142	.....	3,273
December.....	2,003	404	170	137	.....	2,714

Table 468.—Fuel and Electricity Used in the Clay Products Industry in Canada, 1925 and 1926

Kind		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Anthracite coal.....	tons	66	951	6,450	26,829
Bituminous coal.....	tons	203,346	1,372,147	204,111	1,447,523
Lignite coal.....	tons	3,843	13,863	8,986	19,356
Coke.....	tons	2,691	21,546	1,976	17,297
Fuel oil.....	Imp. gal.	129,702	13,629	272,410	29,160
Gas.....	M. cu. ft.	546,458	27,779	555,136	15,223
Gasoline.....	Imp. gal.	21,548	6,215	22,130	6,883
Wood.....	cords	44,256	235,295	57,967	263,881
Other fuel.....					51
Electric power.....	k.w.h.	12,455,033	218,166	15,729,185	253,851
<b>Total.....</b>			<b>1,909,591</b>		<b>2,080,054</b>

Table 469.—Power Employed in the Clay Products Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	94	7,402	110	8,365
Internal combustion engines.....	29	804	38	987
Hydraulic turbines and water wheels.....	1	150		
<i>Total primary power.....</i>	<i>124</i>	<i>8,356</i>	<i>148</i>	<i>9,352</i>
Electric motors run by purchased power.....	313	12,930	367	14,213
<b>Total power employed.....</b>	<b>437</b>	<b>21,286</b>	<b>515</b>	<b>23,565</b>
Electric motors run by primary power in same plant.....	27	942	9	267
<i>Total electric motors.....</i>	<i>340</i>	<i>13,872</i>	<i>376</i>	<i>14,480</i>
Boilers.....	119	9,831	120	9,349

## IMPORTED-CLAY PRODUCTS

NOTE:—In addition to the companies making clay products from domestic clays, there are several other concerns which use imported clays. Data regarding the operations of these companies are given in the next following tables.

Table 470.—Principal Statistics in the Imported-Clay Products Industry in Canada, 1924-1926

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Selling value of products
		\$		\$	\$	\$
1924.....	12	1,677,533	489	567,143	141,491	1,879,769
1925.....	12	2,762,951	552	653,211	170,339	1,741,745
1926.....	12	2,849,558	597	783,448	194,903	2,039,514

Table 471.—Capital Employed in the Imported-Clay Products Industry in Canada, 1925 and 1926

	1925	1926
	\$	\$
CAPITAL EMPLOYED AS REPRESENTED BY—		
Cost of lands, buildings, plant machinery and tools.....	1,516,143	1,691,969
Cost of supplies and stocks on hand.....	699,105	611,697
Cash, trading and operating accounts.....	547,703	545,892
<b>Total.....</b>	<b>2,762,951</b>	<b>2,849,558</b>

Table 472.—Employees, Salaries and Wages in the Imported-Clay Products Industry in Canada, by Provinces, 1925 and 1926

Province	Average number of employees					Salaries and wages		
	Salaried employees		Wage-earners		Total	Salaries	Wages	Total
	Male	Female	Male	Female				
1925						\$	\$	\$
Quebec.....	27	2	178	3	210	65,117	198,333	263,450
Ontario.....	27	9	266	40	342	84,771	304,990	389,761
Canada.....	54	11	444	43	552	149,888	503,323	653,211
1926								
Quebec.....	26	4	200	5	235	69,401	252,091	321,492
Ontario.....	32	11	274	45	362	136,725	325,231	461,956
Canada.....	58	15	474	50	597	206,126	577,322	783,448

Table 473.—Wage-Earners in the Imported-Clay Products Industry in Canada, by Months, 1925 and 1926

Month	Number		Month	Number	
	1925	1926		1925	1926
January.....	465	510	July.....	483	524
February.....	467	516	August.....	458	533
March.....	481	530	September.....	499	520
April.....	486	527	October.....	507	530
May.....	492	530	November.....	509	565
June.....	478	511	December.....	509	566

Table 474.—Fuel and Electricity Used in the Imported-Clay Products Industry in Canada, 1925 and 1926

	1925		1926	
	Quantity	Value	Quantity	Value
		\$		\$
Anthracite coal..... tons	1,871	21,637	900	9,161
Bituminous coal..... tons	15,264	107,156	17,899	138,395
Coke..... tons	336	3,608	486	5,365
Fuel oil..... Imp. gal.	213,885	14,815	229,860	17,084
Gas..... M cu. ft.	967	670	10,768	5,499
Wood..... cords	241	2,165	265	2,418
Other fuel.....		98		100
Electric power..... k.w.h.	1,241,190	20,130	1,370,628	16,901
Total.....		170,339		194,903

## LIME

## CANADA

Statistics obtained during the census of 1871 show 1,010 lime kilns in operation in Canada. These kilns were located in Nova Scotia, New Brunswick, Quebec and Ontario. Capital invested in plant and equipment as recorded during that year was \$128,508, and employees numbered 2,042, earning \$157,943; the value of lime produced was \$502,156. A substantial growth was shown in this industry according to data obtained ten years later; active kilns had increased to 1,274 with a corresponding advance in capital investment to a total of \$309,354. Employment in 1881 was furnished 2,537 wage-earners who received \$203,631 and the value of lime produced was \$707,132.

Total production values in the lime industry reached their highest point in 1920. Fifty-eight firms reported operations during that year; their total production was valued at \$3,818,553. Labour statistics showed 1,069 men on the pay-rolls who received \$1,314,186. The next year there were 59 operators in this industry with a total capital investment of \$4,990,969. Securities issued by the joint stock companies carrying on lime burning as an independent enterprise in Canada in 1921, were valued at \$3,171,484 and consisted of issued common stock, \$3,149,900; bonds, \$3,601; and other securities, \$17,983. Canadian investors held 60 per cent of these issued securities; United States residents 38 per cent and the balance was held in Great Britain. Only 87 salaried officials receiving \$131,152 were engaged in the industry in Canada, in addition to whom wage-earners totalling 844 earning \$818,814, were employed in the operation of the plants.

Lime producers in Canada shipped 11,825,736 bushels of quicklime and hydrated lime in 1926; an increase of 15 per cent over the previous high mark for the industry of 10,256,542 bushels set up in 1925. The valuation of the 1926 shipments was \$3,781,484. Canadian producers received an average of 30 cents per bushel for quicklime and \$11.59 per ton for hydrated lime.

Lime importations into Canada decreased 17.7 per cent in 1926 to a total of 110,509 bushels valued at \$42,855. Exports were recorded at 534,618 bushels worth \$344,616.

The capital employed in the 60 plants operating during 1926 amounted to \$5,825,809. Employment statistics showed 89 salaried employees and 1,017 wage-earners engaged in this industry during the year; their earnings totalled \$1,082,854. Fuel used in the lime industry during 1926 necessitated the expenditure of \$738,918. Electric power used caused a further outlay of \$50,072. The total primary power installation consisted of 31 units with a rating of 1,143 h.p. Electric motors in operation during the year numbered 177 units rated at 3,250 h.p.

Table 475.—Production of Lime in Canada, 1886-1926

Year	Value	Year	Bushels	Value	Year	Bushels	Value
	\$			\$			\$
1886.....	283,755	1900 (Estimated).....		800,000	1914.....	7,028,582	1,360,628
1887.....	394,859	1901 (Estimated).....		830,000	1915.....	5,047,244	1,015,702
1888.....	332,951	1902 (Estimated).....		892,000	1916.....	5,493,250	1,061,463
1889.....	362,848	1903 (Estimated).....		900,000	1917.....	6,567,170	1,558,487
1890.....	412,308	1904 (Estimated).....		780,000	1918.....	6,363,951	1,876,025
1891.....	251,215	1905 (Estimated).....		750,000	1919.....	7,147,504	2,310,607
1892.....	411,270	1906.....	5,230,406	1,009,177	1920.....	9,427,334	3,818,553
1893 (Estimated)...	900,000	1907.....	4,755,316	974,595	1921.....	6,879,066	2,781,197
1894.....	900,000	1908.....	3,601,468	712,947	1922.....	8,972,971	3,165,005
1895.....	700,000	1909.....	5,592,924	1,132,756	1923.....	10,035,319	3,266,008
1896.....	650,000	1910.....	5,848,146	1,137,079	1924.....	9,136,952	3,178,541
1897.....	650,000	1911.....	7,533,525	1,517,599	1925.....	10,256,542	3,387,652
1898 (Estimated)...	650,000	1912.....	8,475,839	1,844,849	1926.....	11,825,736	3,781,484
1899 (Estimated)...	800,000	1913.....	7,558,484	1,609,398			
					<b>Total.....</b>		<b>55,188,558</b>

Table 476.—Production of Lime in Canada, 1925 and 1926, Showing Purposes for Which Sold or Used

Purpose for which sold or used	1925				1926			
	Quicklime		Hydrated lime		Quicklime		Hydrated lime	
	Bushels	Value	Tons	Value	Bushels	Value	Tons	Value
		\$		\$		\$		\$
Building trades.....	1,003,084	369,574	29,658	358,178	1,206,425	432,613	37,386	454,261
Chemical works.....	3,145,399	992,360	2,325	18,576	3,425,760	1,022,796	501	3,507
Glass works.....	78,653	21,706			119,767	34,165		
Smelters.....	181,749	58,404			663,359	124,250		
Pulp and paper mills.....	2,028,002	479,025	5,569	37,562	2,527,255	622,440	5,382	39,797
Sugar refineries.....	314,786	94,974			298,561	100,394		
Tanneries.....	98,414	30,142	177	1,272	56,437	17,399	225	1,850
Agricultural uses (fertilizer).....	13,667	2,784	611	5,119	7,243	2,150	890	7,007
Dealers (uses unspecified).....	868,658	278,760	16,992	198,430	899,078	289,597	13,222	163,419
Other consumers.....	796,987	377,036	5,118	63,750	741,451	373,049	8,208	102,830
<b>Total sold or used.....</b>	<b>8,529,399</b>	<b>2,704,765</b>	<b>60,450</b>	<b>682,887</b>	<b>9,945,336</b>	<b>3,018,853</b>	<b>65,814</b>	<b>762,631</b>

Table 477.—Production of Lime in Canada, by Provinces, 1924-1926

Province		Quicklime		Hydrated Lime		Total	
		Sold or used		Sold or used		Sold or used	
		Bushels	Value	Bushels	Value	Bushels	Value
			\$		\$		\$
Nova Scotia.....	1924.....			2,229	936	2,229	936
	1925.....	57	20	8,200	3,444	8,257	3,464
	1926.....	446,626	56,777	7,171	3,000	453,797	59,777
New Brunswick.....	1924.....	208,180	108,890			208,180	108,890
	1925.....	202,106	92,216			202,106	92,216
	1926.....	477,226	196,477			477,226	196,477
Quebec.....	1924.....	2,219,359	640,990	167,086	58,947	2,386,445	699,937
	1925.....	2,272,751	601,081	269,486	72,249	2,542,237	673,330
	1926.....	2,509,006	667,480	340,629	98,636	2,849,635	766,116
Ontario.....	1924.....	4,391,050	1,401,545	1,028,257	438,607	5,419,307	1,840,152
	1925.....	5,115,974	1,566,540	1,188,857	477,585	6,304,831	2,044,125
	1926.....	5,402,261	1,593,468	1,120,486	457,978	6,522,747	2,051,446
Manitoba.....	1924.....	394,229	121,518			394,229	121,518
	1925.....	324,515	100,833	125,800	69,397	450,315	170,230
	1926.....	498,875	147,401	186,514	103,868	685,389	251,269
Alberta.....	1924.....	89,814	36,083	400	186	90,214	36,279
	1925.....	98,938	39,852			98,938	39,852
	1926.....	108,309	39,517			108,309	39,517
British Columbia.....	1924.....	517,577	320,312	118,771	50,517	636,348	370,829
	1925.....	515,058	304,223	134,800	60,212	649,858	364,435
	1926.....	503,033	317,733	225,600	99,149	728,633	416,882
Canada.....	1924.....	7,820,209	2,629,338	1,316,743	549,203	9,136,952	3,178,541
	1925.....	8,529,399	2,704,765	1,727,143	682,887	10,256,542	3,387,652
	1926.....	9,945,336	3,018,853	1,880,400	762,631	11,825,736	3,781,484

Table 478.—Imports into Canada and Exports of Lime, 1924-1926

Item	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Imports.....	4,418	46,578	4,700	47,639	3,868	42,855
Exports.....	22,750	411,122	16,286	312,168	18,712	344,616

Table 479.—Principal Statistics in the Lime Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	63	4,984,910	1,110	1,013,486	*725,168	522,222	3,165,005
1923.....	50	6,050,954	1,197	1,191,416	953,709	806,916	3,266,608
1924.....	49	5,165,964	927	970,672	740,873	757,898	3,178,541
1925.....	56	5,154,046	1,006	960,434	762,814	673,447	3,387,652
1926.....	54	5,826,809	1,106	1,082,854	788,990	(a)	3,781,484

\*Fuel only.

(a) Data not available.

Table 480.—Capital Employed in the Lime Industry in Canada, by Provinces, 1925 and 1926

Province	1925				1926			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
New Brunswick*	204,712	28,052	27,708	260,472	222,339	27,064	42,722	292,125
Quebec	1,030,409	113,441	176,290	1,320,140	1,194,764	168,214	252,927	1,615,905
Ontario	1,520,717	226,693	134,054	1,881,464	1,636,927	203,370	172,625	2,012,922
Manitoba	398,849	21,621	12,605	433,075	522,217	19,229	22,586	564,032
Alberta	134,142	15,565	18,457	168,164	134,328	14,995	18,063	167,386
British Columbia	935,190	32,193	123,348	1,090,731	1,002,481	51,598	119,360	1,173,439
<b>Canada</b>	<b>4,224,019</b>	<b>437,565</b>	<b>492,462</b>	<b>5,154,046</b>	<b>4,713,056</b>	<b>484,470</b>	<b>628,283</b>	<b>5,825,809</b>

\*Includes data for Nova Scotia.

Table 481.—Employees, Salaries and Wages in the Lime Industry in Canada by Provinces, 1925 and 1926

Province	Average number of employees			Salaries and wages		
	Salaried employees	Wage-earners	Total	Salaries	Wages	Total
1925				\$	\$	\$
New Brunswick*	16	51	67	15,791	32,259	48,050
Quebec	15	253	268	25,104	178,588	203,692
Ontario	40	427	467	77,186	437,676	514,862
Manitoba	4	67	71	5,950	45,339	51,289
Alberta	4	13	17	4,700	13,781	18,481
British Columbia	10	110	120	17,252	103,808	121,060
<b>Canada</b>	<b>89</b>	<b>917</b>	<b>1,006</b>	<b>145,983</b>	<b>814,451</b>	<b>960,434</b>
1926						
New Brunswick*	13	119	132	19,706	78,078	97,784
Quebec	16	260	276	32,920	231,358	264,278
Ontario	37	408	445	72,727	412,988	485,715
Manitoba	7	84	91	11,200	62,576	73,776
Alberta	4	14	18	4,900	16,216	21,216
British Columbia	12	132	144	16,497	123,588	140,085
<b>Canada</b>	<b>89</b>	<b>1,017</b>	<b>1,106</b>	<b>157,950</b>	<b>924,904</b>	<b>1,082,854</b>

\* Includes data for Nova Scotia.

Table 482.—Wage-Earners in the Lime Industry in Canada, by Provinces and by Months, 1926

Month	New* Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
January	72	168	401	56	8	130	835
February	78	171	345	53	12	127	786
March	78	187	367	71	14	129	846
April	102	184	369	98	16	135	904
May	97	224	407	81	16	137	962
June	106	263	378	79	17	138	981
July	105	268	356	99	12	131	971
August	89	291	348	110	15	132	985
September	89	289	385	89	18	126	896
October	101	293	391	97	17	134	1,033
November	108	245	384	84	11	140	972
December	106	225	375	72	9	130	917

\* Includes data for Nova Scotia.

Table 483.—Fuel and Electricity Used in the Lime Industry in Canada, 1925 and 1926

Kind		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Anthracite coal.....	tons	1,582	7,173	1,226	5,687
Bituminous coal.....	tons	63,654	393,827	63,760	392,279
Lignite coal.....	tons	38	329	35	327
Coke.....	tons	5,622	48,756	9,948	72,810
Fuel oil.....	Imp. gal.	278	97		
Gas.....	M cu. ft.	55,737	6,777	32,613	9,343
Gasoline.....	Imp. gal.	1,410	396	1,088	339
Wood.....	cords	59,180	257,309	58,932	258,133
Other fuel.....			3,276		
Electric power.....	k. w. h.	3,123,662	44,874	2,333,680	50,072
<b>Total.....</b>			<b>762,814</b>		<b>788,990</b>

Table 484.—Power Employed in the Lime Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	22	1,052	23	1,034
Internal combustion engines.....	7	72	7	79
Hydraulic turbines or water wheels.....	1	30	1	30
<i>Total primary power.....</i>	<i>30</i>	<i>1,154</i>	<i>31</i>	<i>1,143</i>
Electric motors run by purchased power.....	126	2,449	143	2,635
<b>Total power employed.....</b>	<b>156</b>	<b>3,603</b>	<b>174</b>	<b>3,778</b>
Electric motors run by primary power in same plant.....	23	264	34	615
<i>Total electric motors.....</i>	<i>149</i>	<i>2,713</i>	<i>177</i>	<i>3,250</i>
Boilers.....	23	1,338	20	1,078

## SAND AND GRAVEL

Production statistics for the sand and gravel industry in Canada were first collected in 1912. Prior to that year the only data available consist of Customs' records of sand and gravel exported. In 1886 exportations amounted to 124,865 tons; twenty-four years later exports had risen to 624,824 tons appraised at \$407,974. During 1912, production was valued at \$1,512,099 and wages paid to the 875 pit employees totalled \$527,425. It was not until 1916 that tonnage statements were obtained from the operators in this industry; the total for that year amounted to 8,156,207 tons at \$1,838,320. Since 1918, the annual production has exceeded the 10-million-ton mark. The highest market valuation per ton for this material was received in 1920, when 11,530,795 tons were sold for \$4,201,067. During that year, the 186 producers employed 1,546 men whose total earnings were \$1,343,212. Statistics for 1922, showed that the investment in plant and equipment by the 342 sand and gravel operators amounted to \$4,098,928, while the 750 men employed received \$684,626 and produced 11,666,374 tons valued at \$3,502,935. In 1926 the 580 producers reported fixed and current assets at \$6,274,090. Employment during the year was furnished 5,672 persons whose earnings amounted to \$1,557,232 and the total production of 17,112,798 tons worth \$4,941,434 was a record for the industry in Canada. In 1925 shipments totalled 11,018,647 tons or 55.3 per cent less than in the current year.

Imports of sand and gravel in 1926 were recorded at 254,935 tons worth \$212,038, and silica sand imported for the manufacture of glass and carborundum and for use in foundries amounted to 155,109 tons invoiced at \$372,488. Exports of sand and gravel advanced considerably in 1926 when 907,935 tons appraised at \$278,278 were shipped from Canada.

For statistical purposes, the sand and gravel industry has been divided into two parts comprising the operations of (1) railway companies producing sand and gravel for ballast and other purposes; (2) all other producers.

The figures given in the following tables do not include the operations of railway companies except where specifically mentioned. The railway companies were not asked to furnish any statistics for this industry other than the figures for production, as, owing to the varied nature of their operations, it would have been difficult for them to give the detailed data generally required. Among the other operating plants in this industry, of which there were 580 in Canada in 1926, it was found that the production of sand and gravel was often a subsidiary part of the business transacted. On this account the figures shown for capital employed refer in small part to other industries, but on the whole, relate as closely as possible to the industry under review.

Table 485.—\*Production of Sand and Gravel in Canada, 1886-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	124,865	24,226	1900.....	197,558	101,666	1914.....		2,505,310
1887.....	180,860	30,307	1901.....	197,302	117,465	1915.....		1,624,767
1888.....	260,929	38,368	1902.....	159,793	119,120	1916.....	8,156,207	1,838,320
1889.....	283,044	52,647	1903.....	355,792	124,006	1917.....	9,182,417	2,326,249
1890.....	342,158	65,518	1904.....	399,809	189,803	1918.....	11,262,282	2,367,018
1891.....	243,724	59,501	1905.....	306,935	152,805	1919.....	10,364,481	2,680,460
1892.....	297,878	85,329	1906.....	336,550	139,712	1920.....	11,530,795	4,201,067
1893.....	329,116	121,795	1907.....	298,095	119,853	1921.....	11,574,862	2,537,249
1894.....	324,656	86,940	1908.....	298,954	161,387	1922.....	11,666,374	3,502,935
1895.....	277,162	118,359	1909.....	481,584	256,166	1923.....	12,752,515	3,016,518
1896.....	224,769	80,110	1910.....	624,824	407,974	1924.....	11,603,500	3,181,083
1897.....	152,963	76,729	1911.....	573,494	408,110	1925.....	11,018,647	3,220,410
1898.....	165,954	90,498	1912.....		1,512,099	1926.....	17,112,798	4,941,434
1899.....	242,450	101,640	1913.....		2,258,874			
						<b>Total.....</b>		<b>45,043,857</b>

\* Exports prior to 1912 as no production statistics were collected.

Table 486.—Production in Canada, Imports and Exports of Sand and Gravel, 1924-1926

Kind	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
<b>PRODUCTION—</b>						
Sand—						
Moulding sand.....	118,202	80,072	57,656	48,880	79,373	62,151
Building sand and sand for concrete, roads, etc.....	2,662,809	911,173	2,557,623	755,289	2,026,847	808,023
Other sand (including blast, core and engine sands).....	46,515	22,346	47,538	17,770	88,736	27,303
Sand and Gravel—						
Sand and gravel for railway ballast.....	5,076,511	696,966	3,950,328	570,235	6,595,161	774,055
Sand and gravel for concrete, roads, etc.....	3,086,663	1,203,259	3,955,166	1,626,834	7,686,432	3,005,365
Crushed gravel.....	612,800	267,267	450,336	201,402	636,249	264,537
<b>Total.....</b>	<b>11,603,500</b>	<b>3,181,083</b>	<b>11,018,647</b>	<b>3,220,410</b>	<b>17,112,798</b>	<b>4,941,434</b>
<b>IMPORTS—</b>						
Sand, silica for glass and carborundum manufacture, etc.....	131,778	324,279	143,501	353,237	155,109	372,488
Sand and gravel, n.o.p.....	150,868	118,397	282,203	184,000	254,935	212,038
<b>Total.....</b>	<b>282,646</b>	<b>442,676</b>	<b>425,704</b>	<b>537,237</b>	<b>410,044</b>	<b>584,526</b>
<b>EXPORTS.....</b>	<b>1,036,029</b>	<b>210,496</b>	<b>864,672</b>	<b>198,485</b>	<b>907,935</b>	<b>278,278</b>

Table 487.—Production of Sand and Gravel in Canada, by Railway Operators, 1924-1926

Kind	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Sand—						
Moulding sand.....	4,779	708	526	780	365	540
Building sand and sand for concrete, roads, etc.....	23,121	7,317	26,769	10,816	85,885	17,096
Other sand (including blast, core and engine sands).....	35,703	11,961	38,095	8,927	42,385	8,140
Sand and Gravel—						
Sand and gravel for railway ballast.....	5,063,711	679,297	3,755,028	500,958	6,273,965	694,485
Sand and gravel for concrete, roads, etc....	188,740	39,886	389,280	95,294	212,306	48,583
Crushed gravel.....			1,215	1,665		
<b>Total.....</b>	<b>5,316,054</b>	<b>739,169</b>	<b>4,210,913</b>	<b>618,440</b>	<b>6,614,906</b>	<b>768,849</b>

Table 488.—Production of Sand and Gravel by Operators Other than Railway in Canada, 1924-1926

Kind	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$
Sand—						
Moulding sand.....	113,423	79,364	57,130	48,100	79,008	61,611
Building sand and sand for concrete roads, etc.....	2,639,688	903,856	2,530,854	744,473	1,940,962	790,927
Other sand (including blast, core and engine sands).....	10,812	10,385	9,443	8,843	46,351	19,163
Sand and Gravel—						
Sand and gravel for railway ballast.....	12,800	17,669	195,300	69,277	321,196	79,570
Sand and gravel for concrete, roads, etc....	2,897,923	1,163,373	3,565,886	1,531,540	7,474,126	2,956,777
Crushed gravel.....	612,800	267,267	449,121	199,737	636,249	264,537
<b>Total.....</b>	<b>6,287,446</b>	<b>2,441,914</b>	<b>6,807,734</b>	<b>2,601,970</b>	<b>10,497,892</b>	<b>4,172,585</b>

Table 489.—Production of Sand and Gravel in Canada, by Provinces, 1925 and 1926

Kind	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
1925									
Sand—									
Moulding sand.....tons			6	57,076	574				57,656
\$			24	48,263	593				48,880
Building sand and sand for concrete, roads, etc.....tons	4,787	40	1,088,619	1,355,834	34,717	216	26,139	47,271	2,557,623
\$	3,758	13	254,668	464,383	16,865	26	5,488	10,088	755,289
Other sand (including blast, core and engine sands).....tons	3,357	1,049	8,593	14,016	317	12,220	7,567	419	47,538
\$	2,783	334	1,931	7,937	249	3,139	1,165	232	17,770
Sand and Gravel—									
Sand and gravel for railway ballast.....tons	*231,206	48,172	646,148	905,171	359,235	514,797	328,862	916,737	3,950,328
\$	31,818	8,018	101,336	85,804	40,710	68,718	42,326	191,505	570,235
Sand and gravel for concrete, roads, etc.....tons	45,949	20,895	459,830	2,440,932	332,309	52,668	171,601	430,982	3,955,166
\$	15,338	3,966	175,891	992,143	138,184	16,922	57,245	227,145	1,626,834
Crushed gravel.....tons	1,215			428,575			723	19,823	450,336
\$	1,665			180,599			1,212	17,926	201,402
Total.....tons	*286,514	70,156	2,203,196	5,201,604	727,152	579,901	534,892	1,415,232	11,018,647
\$	*55,362	12,331	533,850	1,779,129	196,601	88,805	107,436	446,896	3,220,410
1926									
Sand—									
Moulding sand.....tons	60			78,120	956			237	79,373
\$	150			59,482	1,062			1,457	62,151
Building sand.....tons	15,275		628,433	1,260,569	47,188	37,800	5,513	32,069	2,026,847
\$	14,097		197,045	540,213	20,670	25,500	2,042	8,456	805,023
Other sand (including blast, core and engine sands).....tons	4,172	750	8,660	45,045	4,033	16,008	1,455	8,613	88,736
\$	3,275	364	1,105	16,419	635	3,305	334	1,866	27,303
Sand and Gravel—									
Sand and gravel for railway ballast.....tons	208,549	50,334	957,958	1,681,762	622,092	785,766	1,441,657	847,043	6,595,161
\$	34,288	6,902	133,834	149,683	73,065	108,905	178,576	88,802	774,055
Sand and gravel for concrete, roads, etc.....tons	2,250	19,847	3,528,459	2,924,523	302,882	24,327	285,851	598,293	7,686,432
\$	1,142	4,094	1,134,204	1,321,950	77,504	7,586	201,421	257,404	3,005,365
Crushed gravel.....tons			110,187	493,143	12,429		20,490		636,249
\$			24,486	204,931	5,063		30,057		264,537
Total.....tons	230,306	70,931	5,233,697	6,483,162	989,580	863,901	1,754,966	1,486,255	17,112,798
\$	52,952	11,360	1,490,674	2,292,678	178,059	145,296	412,430	357,985	4,941,434

\*Includes 35,430 tons valued at \$5,475 used in Prince Edward Island.

Table 490.—Principal Statistics in the Sand and Gravel Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	342	4,098,928	750	684,626	*99,069	445,222	3,502,935
1923.....	598	4,487,005	801	692,161	99,409	270,554	3,016,518
1924.....	558	5,194,037	927	848,741	134,378	(a)	3,181,083
1925.....	622	5,286,268	1,650	1,231,856	158,645	(a)	3,220,410
1926.....	580	6,274,090	5,672	1,557,232	151,236	(a)	4,941,434

\*Fuel only.

(a) Data not available.

Table 491.—Capital Employed in the Sand and Gravel Industry in Canada, by Provinces, 1925 and 1926

Province	1925				1926			
	Capital employed as represented by				Capital employed as represented by			
	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total	Lands, buildings plant machinery and tools	Cost of supplies and products on hand	Cash, trading and operating accounts	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....					18,951			18,951
Quebec.....	464,255	11,725	75,325	551,305	771,513	9,867	35,208	816,588
Ontario.....	3,064,386	44,464	194,181	3,303,031	3,457,853	37,032	206,851	3,701,736
Manitoba.....	321,739	9,427	84,865	416,031	266,015	5,505	66,499	338,019
Saskatchewan.....	39,750			39,750	39,750			39,750
Alberta.....	315,187	832	2,157	318,176	323,000	800	2,000	325,800
British Columbia.....	618,686	745	38,544	657,975	1,012,471	4,455	16,320	1,033,246
<b>Canada.....</b>	<b>4,824,003</b>	<b>67,193</b>	<b>395,072</b>	<b>5,286,268</b>	<b>5,889,553</b>	<b>57,659</b>	<b>326,878</b>	<b>6,274,090</b>

Table 492.—Employees, Salaries and Wages in the Sand and Gravel Industry by Provinces, 1925 and 1926

	Average number of employees			Salaries and wages		
	Salaried employees	Wage-earners	Total	Salaries	Wages	Total
1925				\$	\$	\$
Nova Scotia*.....		27	27		6,088	6,088
Quebec.....	20	472	492	20,765	199,880	220,645
Ontario.....	59	743	802	142,669	587,656	730,325
Manitoba.....	7	133	140	16,200	85,794	101,994
Saskatchewan.....		3	3		2,504	2,504
Alberta.....	2	103	105	4,260	36,902	41,162
British Columbia.....	10	71	81	25,618	103,520	129,138
<b>Canada.....</b>	<b>98</b>	<b>1,552</b>	<b>1,650</b>	<b>209,512</b>	<b>1,022,344</b>	<b>1,231,856</b>
1926						
Nova Scotia*.....	1	12	13	150	3,191	3,341
Quebec.....	4	4,990	4,994	5,936	680,885	686,821
Ontario.....	52	444	496	118,157	521,379	639,536
Manitoba.....	7	35	42	14,070	31,880	45,950
Saskatchewan.....	1	7	8	139	19,900	20,039
Alberta.....	3	32	35	6,700	33,465	40,165
British Columbia.....	12	72	84	25,866	95,514	121,380
<b>Canada.....</b>	<b>80</b>	<b>5,592</b>	<b>5,672</b>	<b>171,018</b>	<b>1,386,214</b>	<b>1,557,232</b>

\*Includes data for 1 firm in New Brunswick.

Table 493.—Wage-Earners in the Sand and Gravel Industry in Canada, by Months and by Provinces, 1926

Month	Nova Scotia and New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Canada
January.....	1	171	153	3	3	2	53	386
February.....	4	150	193	3	3	2	52	407
March.....	3	142	242	15	3	30	62	497
April.....	3	240	381	38	4	40	77	783
May.....	5	455	534	34	4	43	85	1,160
June.....	6	4,933	641	40	12	55	80	5,767
July.....	13	5,335	674	48	12	46	94	6,222
August.....	13	938	633	38	12	41	84	1,759
September.....	10	886	614	34	12	44	85	1,685
October.....	5	1,001	609	37	12	37	57	1,758
November.....	5	838	523	16	4	36	48	1,470
December.....	2	397	326	4	4	1	46	780

Table 494.—Fuel and Electricity Used in the Sand and Gravel Industry in Canada, 1925 and 1926

		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Anthracite coal.....	tons	80	580	250	2,754
Bituminous coal.....	tons	22,058	125,617	18,961	118,833
Lignite coal.....	tons	500	1,776		
Fuel oil.....	Imp. gal.	13,375	1,834	16,093	2,802
Gasoline.....	Imp. gal.	30,058	7,902	34,264	10,002
Wood.....	cords	372	1,550	243	1,192
Electric power.....	k.w.h.	1,029,617	19,386	873,980	15,653
<b>Total.....</b>			<b>158,645</b>		<b>151,236</b>

Table 495.—Power Employed in the Sand and Gravel Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total h.p. according to manufacturers' rating	Number of units	Total h.p. according to manufacturers' rating
Steam engines and turbines.....	62	3,920	84	5,725
Internal combustion engines.....	39	865	33	715
Hydraulic turbines or water wheels.....	5	239	5	239
<i>Total primary power.....</i>	<i>106</i>	<i>5,024</i>	<i>122</i>	<i>6,679</i>
Electric motors run by purchased power.....	67	1,383	78	2,037
<b>Total power employed.....</b>	<b>173</b>	<b>6,407</b>	<b>200</b>	<b>8,716</b>
Electric motors run by primary power in same plant.....	7	485	7	395
<i>Total electric motors.....</i>	<i>74</i>	<i>1,868</i>	<i>85</i>	<i>2,432</i>
Boilers.....	46	5,252	50	5,505

## SAND-LIME BRICK

**Canada.**—Production of sand-lime brick in Canada in 1926 totalled 50,282 thousand valued at \$606,409 as compared with 68,869 thousand worth \$854,055 in 1925. Ten plants were in operation in 1926 of which 8 were in Ontario and 2 in Manitoba; in 1925 a similar number of establishments were active.

Capital employed in the industry in 1926 amounted to \$1,082,577 as against \$930,729 in the previous year; employees numbered 218 as against 239 in 1925 and materials used in manufacture cost \$197,400 as compared with a corresponding figure of \$130,555 in 1925.

Because of its association with other building materials, data regarding the production of sand-lime brick are included in this report. Statistics relating to sand-lime brick are not included in the totals for structural materials industries as both the sand and lime used have been so recorded; production of sand-lime brick is regarded as a manufacturing operation and therefore is shown in the report on the *Manufactures of Non-Metallic Minerals*, issued annually by the Bureau.

Table 496.—Principal Statistics in the Sand-Lime Brick Industry in Canada, 1922-1926.

Year	Number of plants	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Selling value of products
		\$		\$	\$	\$
1922.....	11	1,224,808	223	287,705	58,258	858,807
1923.....	8	1,042,619	225	285,248	50,810	897,960
1924.....	12	1,346,239	236	248,045	61,237	619,946
1925.....	10	960,729	239	257,116	62,044	854,055
1926.....	10	1,082,577	218	223,599	50,119	*629,672

†Fuel only.

\*Includes value of hollow building blocks, etc. produced.

Table 497.—Sand-Lime Brick Manufactured in Canada, by Provinces, 1924-1926

Province	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
	M	\$	M	\$	M	\$
Ontario.....	54,410	604,275	66,506	820,893	46,869	555,847
Manitoba.....	1,104	11,040	2,363	33,162	3,413	50,562
Saskatchewan.....	359	4,631				
<b>Total.....</b>	<b>55,873</b>	<b>619,946</b>	<b>68,869</b>	<b>854,055</b>	<b>50,282</b>	<b>606,409</b>

## SLATE

Slate deposits located along the south shore of the St. Lawrence river in Quebec were operated for the first time in 1854. Production from these deposits reached a maximum in point of value in 1889 when 6,935 tons valued at \$119,160 were shipped. These shipments consisted of roofing slates, mantles and slabs. Quarrying operations were carried on at the Quebec deposits up to 1923, in which year 1,836 tons of crushed green and red slate were shipped for use in the manufacturing of roofing paper. No production has been recorded since that date.

During 1908 a slate quarry was operated at Jarvis Inlet, British Columbia.

Imports of slate products into Canada during 1926 were valued at \$218,142 as compared with a valuation of \$205,507 in 1925.

Table 498.—Production of Slate in Canada, 1886-1926

—	Tons*	Value	—	Tons*	Value	—	Tons*	Value
		\$			\$			\$
1886.....	5,345	64,675	1899.....		33,406	1912.....	1,894	8,939
1887.....	7,357	89,000	1900.....		12,100	1913.....	1,432	6,444
1888.....	5,314	90,689	1901.....	715	9,980	1914.....	1,075	4,837
1889.....	6,935	119,160	1902.....		19,200	1915.....	397	2,039
1890.....	6,368	100,250	1903*	5,510	22,040	1916.....	1,262	6,223
1891.....	5,000	65,000	1904.....	5,277	23,247	1917.....	1,422	7,789
1892.....	5,180	69,070	1905.....		21,568	1918.....	933	5,124
1893.....	7,112	90,825	1906.....		24,446	1919*	1,632	10,853
1894.....		75,550	1907.....	4,335	20,056	1920.....	(a)	14,200
1895.....		58,900	1908.....	2,950	13,496	1921.....	(b)	22,325
1896.....		53,370	1909.....	4,000	19,000	1922.....	1,899	14,871
1897.....		42,800	1910.....	3,959	18,492	1923.....	1,836	17,289
1898.....		40,791	1911.....	1,833	8,248	1924-26.....		
<b>Total.....</b>								<b>1,326,292</b>

\*1903 to 1919 inclusive quantity recorded in squares.

(a) 1,532 squares valued at \$12,362 and 240 tons crushed slate at \$1,838.

(b) 415 sq" res valued at \$4,063 and 2,232 tons crushed slate at \$18,262.

Table 499.—Production in Canada and Imports of Slate, 1924-1926

	1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value
		\$		\$		\$
PRODUCTION.....						
IMPORTS—						
Roofing.....Squares	5,718	71,298	4,411	50,331	4,963	57,418
School-writing.....		74,879		102,878		92,766
Pencils.....		7,601		4,810		6,361
Mantles and manufactures of slate, n.o.p.....		66,624		47,488		61,597
<b>Total.....</b>		<b>220,402</b>		<b>205,507</b>		<b>218,142</b>

## STONE

Statistics of the stone industry as set forth in this report have been confined to quarrying operations and to the production of dressed stone when this operation is carried on in conjunction with the quarrying. The kinds of stone quarried in Canada include granite (trap-rock, syenite and other igneous rock), limestone, marble and sandstone. In 1926 granite was produced in Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia; limestone was obtained in all provinces except Saskatchewan; marble was quarried in Quebec; and the sandstone output had its source in Nova Scotia, Quebec, Ontario and British Columbia.

Granite production in Canada has increased from 6,062 tons in 1886 to a grand total of 971,718 tons in 1925 and 1,064,423 tons in 1926.

Limestone is quarried for use in the production of cement and lime and for smelter flux. The value of limestone production has advanced from a total of \$2,139,691 in 1909 to \$5,657,328 in 1926. During the latter year 83·1 per cent of the production was marketed as crushed stone for concrete aggregates, road metal and similar uses; 2·4 per cent as building, monumental and ornamental stone; 5·9 per cent for flux; 4·1 per cent for use in sugar factories, and chemical works; the balance or 4·5 per cent consisted of 222,576 tons of rubble and riprap and small tonnages of flagstones, agricultural limestone and poultry grit.

The production of marble in Canada during the period 1886-1896 was relatively small, totalling 3,391 tons valued at \$45,837. From 1897 to 1907, inclusive, records do not show any production of marble in Canada. With the opening of quarries at Philipsburg and South Stukely, Quebec; at Bancroft and Marble Bluff, Ontario; and near Lardeau and on Nootka Sound, British Columbia; the production became of considerable importance. In 1908 marble shipments were valued at \$125,000 but in 1912 an advance to a total valuation of \$260,764 was made. The maximum output value for the industry of \$521,572 was reached in 1926 when 3,442 tons of marble for building purposes and 1,853 tons of crushed marble were shipped from Quebec and Ontario deposits.

Sandstone produced in Canada during 1909 was valued at \$374,179; the following year there was an increase in production to a total of \$502,148 the highest output value recorded for this industry. The period 1921-1923, inclusive, showed a considerable falling-off in production, but in 1924, an advance to 94,603 tons valued at \$240,273 was made. Shipments of sandstone during 1926 totalled 44,127 tons worth \$112,347.

Table 500.—Production of Granite in Canada, 1886-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	3,062	63,309	1900.....		80,000	1914.....		2,176,602
1887.....	21,217	142,506	1901.....		155,000	1915.....		1,525,553
1888.....	21,352	147,305	1902.....		210,000	1916.....		1,247,267
1889.....	10,197	79,624	1903.....		200,000	1917.....		639,412
1890.....	13,307	65,985	1904.....		150,000	1918.....		590,871
1891.....	13,637	70,056	1905.....		226,305	1919.....		850,563
1892.....	24,302	89,326	1906.....		278,419	1920.....		1,508,916
1893.....	22,521	94,393	1907.....	151,136	194,712	1921.....	319,398	937,894
1894.....	16,392	109,936	1908.....		282,320	1922.....	457,925	1,486,250
1895.....	19,238	84,838	1909.....		454,824	1923.....	398,432	1,159,303
1896.....	18,717	106,709	1910.....		739,516	1924.....	419,971	1,013,345
1897.....	10,345	61,934	1911.....		1,119,865	1925.....	971,718	2,014,535
1898.....	23,897	81,073	1912.....		1,373,119	1926.....	1,064,423	1,574,627
1899.....	13,418	90,542	1913.....		1,653,791			
						<b>Total.....</b>		<b>25,130,545</b>

Table 501.—Production of Limestone and Sandstone in Canada, 1886-1926

Year	Lime- stone	Sand- stone	Year	Lime- stone	Sand- stone	Year	Limestone		Sandstone	
							Tons	Value	Tons	Value
	\$			\$	\$		\$	\$		\$
1886.....	650,384		1900.....	1,564,582		1914.....	2,672,781		487,140	
1887.....	581,367		1901.....	1,837,737		1915.....	2,312,081		249,336	
1888.....	664,825		1902.....	2,127,055		1916.....	2,224,091		146,244	
1889.....	937,000		1903.....	2,230,939		1917.....	2,283,659		261,256	
1890.....	984,787		1904.....	2,114,315		1918.....	2,342,403		102,750	
1891.....	723,004		1905.....	2,072,758		1919.....	3,074,815		86,577	
1892.....	633,188		1906.....	2,084,056		1920.....	5,665,693		165,149	
1893.....	1,131,006		1907.....	1,832,550		1921.....	3,322,024	5,155,046	28,426	78,036
1894.....	1,269,645		1908.....	1,681,293		1922.....	3,152,124	4,175,941	25,221	80,908
1895.....	1,136,603		1909.....	2,139,691	374,179	1923.....	3,687,663	4,475,921	22,766	66,547
1896.....	1,042,850		1910.....	2,249,576	502,148	1924.....	4,249,061	4,831,684	94,603	240,273
1897.....	1,037,448		1911.....	2,594,926	451,183	1925.....	4,643,853	5,049,563	87,502	145,757
1898.....	1,335,403		1912.....	2,762,936	329,352	1926.....	5,283,745	5,657,328	44,127	112,347
1899.....	1,551,886		1913.....	3,204,091	396,782					
						<b>Total from 1909....</b>	<b>62,872,226</b>			<b>4,275,964</b>

Table 502.—Production of Marble in Canada, 1886-1926

Year	Tons	Value	Year	Tons	Value	Year	Tons	Value
		\$			\$			\$
1886.....	501	9,900	1897-1907.....			1918.....		550
1887.....	242	6,224	1908.....		125,000	1919.....		213,982
1888.....	191	3,100	1909.....		158,441	1920.....		240,593
1889.....	83	980	1910.....		158,779	1921.....	1,650	172,720
1890.....	780	10,776	1911.....		162,783	1922.....	1,912	231,894
1891.....	240	1,752	1912.....		260,764	1923.....	2,473	201,518
1892.....	340	3,600	1913.....		249,875	1924.....	4,379	322,455
1893.....	590	5,100	1914.....		132,533	1925.....	3,046	254,922
1894.....			1915.....		158,027	1926.....	5,295	521,572
1895.....	200	2,000	1916.....		113,810			
1896.....	224	2,400	1917.....		55,820	<b>Total.....</b>		<b>3,786,975</b>

Table 503.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1925

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—								
Rough..... tons	535		28,389	16,166	9,221		2,026	56,337
\$	3,827		233,523	163,755	39,702		10,775	451,582
Dressed..... tons		461	28,441	1,327	2,300		197	32,726
\$		19,334	704,252	23,112	86,261		13,840	856,799
Monumental and ornamental—								
Rough..... tons	29	613	10,171	657			135	11,605
\$	1,000	10,026	102,251	6,068			15,432	134,778
Dressed..... tons	429	508	1,503	63			1,260	3,763
\$	28,021	45,166	59,584	3,496			53,000	189,267
Flagstone..... tons			200	666				866
\$			250	5,325				5,575
Curbstone..... tons			24,989	4,347			100	29,436
\$			75,132	28,042			1,500	104,674
Paving blocks..... tons		136	16,385	9,191				25,712
\$		3,153	137,974	72,849				213,976
Limestone, for flux..... tons	84,239		6,500	223,410			49,543	363,692
\$	70,742		6,390	197,479			37,138	311,749
Limestone for sugar factories, chemical works, etc..... tons		14,000	107,655	53,057			7,299	182,011
\$		25,800	79,469	39,306			15,259	159,834
Rubble and riprap..... tons	12,690		319,778	81,820	4,435		36,801	455,524
\$	24,618		573,455	69,963	7,362		31,019	706,417
Crushed..... tons	4,203	9,673	1,698,905	2,632,008	36,814	3,979	158,865	4,544,447
\$	6,478	21,264	1,883,175	2,197,938	55,171	6,868	159,232	4,330,126
<b>Total..... tons</b>	<b>102,125</b>	<b>25,391</b>	<b>2,242,916</b>	<b>3,022,712</b>	<b>52,770</b>	<b>3,979</b>	<b>256,226</b>	<b>5,706,119</b>
<b>\$</b>	<b>134,686</b>	<b>121,743</b>	<b>3,855,455</b>	<b>2,817,333</b>	<b>188,496</b>	<b>6,868</b>	<b>337,196</b>	<b>7,464,777</b>
Per cent of total..... Quantity	1.79	0.45	39.31	52.97	0.92	0.07	4.49	100.0
Value	1.80	1.67	51.65	37.74	2.53	0.09	4.52	100.0

Table 504.—Production of Stone in Canada, by Provinces, Showing Purposes for Which Used, 1926

Item	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
Building—								
Rough..... tons	535	550	36,145	22,540	34,380			94,150
\$	4,950	2,400	168,032	88,675	147,396			411,453
Dressed..... tons		305	45,435	8,085	3,522	214	400	57,961
\$		5,328	640,754	75,559	134,953	8,064	5,800	870,458
Monumental and ornamental—								
Rough..... tons		400	9,837	816			3,218	14,271
\$		5,718	178,231	16,412			20,790	221,151
Dressed..... tons	540	2,709	4,179	101			1,289	8,818
\$	33,050	54,316	517,428	5,372			57,210	667,376
Flagstone..... tons			200	836				1,036
\$			120	7,397				7,517
Curbstone..... tons		70	4,758				101	4,929
\$		848	24,391				1,550	26,789
Paving blocks..... tons		20	5,658	1,550			5	7,233
\$		213	36,848	12,746			120	49,927
Limestone for flux..... tons	74,435		3,674	184,586			46,924	309,619
\$	71,711		3,280	153,821			38,753	272,565
Limestone for sugar factories, chemical works, etc..... tons		13,800	106,834	59,767		3,545	34,368	218,314
\$		25,580	106,916	44,410		5,826	64,258	246,990
Poultry grit..... tons	2	2	10				2	16
\$	30	18	200				60	308
Ground limestone for agricultural use..... tons	8,016	1,192	3,008	1,443			552	14,211
\$	25,064	5,034	11,864	1,082			3,209	46,253
Rubble and riprap..... tons	8,487		91,056	136,543	9,360		10,994	256,440
\$	15,537		76,496	104,917	11,358		7,710	216,018
Crushed stone..... tons	300	60	1,994,940	3,205,775	54,309		155,208	5,410,592
\$	450	90	1,963,668	2,641,897	64,177		158,787	4,829,069
<b>Total..... tons</b>	<b>92,315</b>	<b>19,108</b>	<b>2,305,734</b>	<b>3,622,042</b>	<b>101,571</b>	<b>3,759</b>	<b>253,061</b>	<b>6,397,590</b>
<b>\$</b>	<b>150,792</b>	<b>99,545</b>	<b>3,728,228</b>	<b>3,157,288</b>	<b>357,584</b>	<b>13,890</b>	<b>358,247</b>	<b>7,865,874</b>
Per cent of total..... Quantity	1.44	0.30	36.04	56.61	1.59	0.06	3.96	100.00
Value	1.95	1.26	47.39	40.13	4.55	0.17	4.55	100.00

Table 505.—Production of Stone in Canada, by Kinds and by Provinces, 1925

Province	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	14,961	54,524	84,939	73,717			2,225	6,445
New Brunswick.....	9,027	89,731	16,364	35,012				
Quebec.....	491,986	1,363,220	1,677,514	2,160,790	3,046	254,922	70,370	76,523
Ontario.....	263,567	242,150	2,750,115	2,530,621			9,030	44,562
Manitoba.....			52,770	188,496				
Alberta.....			3,979	6,868				
British Columbia.....	192,177	264,910	58,172	54,059			5,877	18,227
<b>Canada.....</b>	<b>971,718</b>	<b>2,014,535</b>	<b>4,643,853</b>	<b>5,049,563</b>	<b>3,046</b>	<b>254,922</b>	<b>87,502</b>	<b>145,757</b>

Table 506.—Production of Stone in Canada, by Kinds and by Provinces, 1926

	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Nova Scotia.....	4,884	41,738	82,753	97,255			4,678	11,799
New Brunswick.....	3,824	66,423	15,054	30,722			230	2,400
Quebec.....	494,385	863,052	1,784,434	2,316,997	4,709	507,817	22,206	40,362
Ontario.....	398,253	359,217	3,214,544	2,742,424	586	13,755	8,659	41,892
Manitoba.....			101,571	357,884				
Alberta.....			3,545	5,826			214	8,064
British Columbia.....	163,077	244,197	81,844	106,220			8,140	7,830
<b>Canada.....</b>	<b>1,064,423</b>	<b>1,574,627</b>	<b>5,283,745</b>	<b>5,657,328</b>	<b>5,295</b>	<b>521,572</b>	<b>44,127</b>	<b>112,347</b>

Table 507.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1925

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
		\$		\$		\$		\$
Building—								
Rough.....	7,480	41,657	47,382	375,016	940	31,082	535	3,827
Dressed.....	11,627	236,651	18,696	378,194	2,106	223,840	297	18,114
Monumental and ornamental—								
Rough.....	11,359	134,295	246	483				
Dressed.....	3,580	188,513	183	754				
Flagstone.....			200	250			666	5,325
Curbstone.....	25,089	76,632					4,347	28,042
Paving blocks.....	25,712	213,976						
Limestone, for flux.....			363,692	311,749				
Limestone for sugar factories, chemical works, etc.....			182,011	159,834				
Rubble and riprap.....	292,166	542,377	92,071	86,271			71,287	77,769
Crushed.....	594,705	580,434	3,939,372	3,737,012			10,370	12,680
<b>Total.....</b>	<b>971,718</b>	<b>2,014,535</b>	<b>4,643,853</b>	<b>5,049,563</b>	<b>3,046</b>	<b>254,922</b>	<b>87,502</b>	<b>145,757</b>

Table 508.—Production of Stone in Canada by Kinds, Showing Purposes for Which Used, 1926

Item	Granite		Limestone		Marble		Sandstone	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Building—		\$		\$		\$		\$
Rough.....	8,442	85,931	78,616	287,501			7,092	38,021
Dressed.....	8,505	190,711	49,016	662,211	66	4,500	374	13,036
Monumental and ornamental—								
Rough.....	13,095	180,681	151	1,284	1,025	39,186		
Dressed.....	5,729	196,820	738	3,908	2,351	466,648		
Flagstone.....			200	120			836	7,397
Curbstone.....	4,929	26,789						
Paving blocks.....	7,233	49,927						
Limestone for flux.....			309,619	274,138				
Limestone for sugar factories, chemical works, etc.....			218,314	246,990				
Poultry grit.....	2	60	14	248				
Ground limestone for agricultural use.....			14,211	46,253				
Rubble and riprap.....	18,145	19,242	222,576	178,252			15,719	16,951
Crushed stone.....	998,343	824,466	4,390,290	3,956,423	1,853	11,238	20,106	36,942
<b>Total.....</b>	<b>1,064,423</b>	<b>1,574,627</b>	<b>5,283,745</b>	<b>5,657,328</b>	<b>5,295</b>	<b>521,572</b>	<b>44,127</b>	<b>112,347</b>

Table 509.—Production in Canada, by Kinds and by Provinces, and Imports and Exports of Stone, 1924-1926

	1924		1925		1926	
	Tons	Value	Tons	Value	Tons	Value
PRODUCTION, BY KINDS—		\$		\$		\$
Granite.....	419,971	1,013,345	971,718	2,014,535	1,064,423	1,574,627
Limestone.....	4,249,061	4,831,684	4,643,853	5,049,563	5,283,745	5,657,328
Marble.....	4,379	322,455	3,046	254,922	5,295	521,572
Sandstone.....	94,603	240,273	87,502	145,757	44,127	112,347
<b>Total.....</b>	<b>4,768,014</b>	<b>6,407,757</b>	<b>5,706,119</b>	<b>7,464,777</b>	<b>6,397,590</b>	<b>7,865,874</b>
PRODUCTION, BY PROVINCES—						
Nova Scotia.....	67,535	111,824	102,125	134,686	92,315	150,792
New Brunswick.....	19,229	114,111	25,391	124,743	19,108	99,545
Quebec.....	1,592,089	2,925,520	2,242,916	3,855,455	2,305,734	3,728,228
Ontario.....	2,840,173	2,789,368	3,022,712	2,817,333	3,622,042	3,157,288
Manitoba.....	54,065	93,876	52,770	188,496	101,571	357,884
Alberta.....	16,698	19,317	3,979	6,868	3,759	13,890
British Columbia.....	178,225	353,741	256,226	337,196	253,061	358,247
<b>Canada.....</b>	<b>4,768,014</b>	<b>6,407,757</b>	<b>5,706,119</b>	<b>7,464,777</b>	<b>6,397,590</b>	<b>7,865,874</b>
IMPORTS—						
Building stone, other than marble or granite, sawn on more than two sides, but not sawn on more than four sides.....	240	3,619	285	4,143	262	4,223
Building stone other than marble or granite, planed, turned, cut or further manufactured than sawn on four sides.....	276	10,886	231	7,917	591	28,561
Flagstone, granite, rough sandstone, and all building stone, not hammered, sawn or chiselled.....		170,555		134,170		187,055
Flagstone and building stone, other than marble or granite, sawn on not more than two sides.....		82,639		97,875		95,790
Granite, sawn only.....		2,226		2,255		6,189
Granite, manufactures of, n.o.p.....		138,011		158,614		175,651
Paving blocks.....		60,544				
Marble, rough, not hammered or chiselled.....		192,181		67,507		91,039
Marble, sawn or sand rubbed, not polished.....		38,655		174,029		186,462
Marble, manufactures of, n.o.p.....		3,168		40,293		101,748
Refuse stone.....	281,824	174,738	160,997	100,544	334,832	220,177
Manufactures of stone, n.o.p.....		36,103		37,645		47,719
<b>Total.....</b>		<b>913,325</b>		<b>824,992</b>		<b>1,144,614</b>
EXPORTS—						
Crushed.....	59,984	100,873	42,518	81,764	101,117	134,755
Granite and marble, unwrought.....	3,390	45,195	3,430	36,552	3,553	38,828
Freestone, limestone, and other building stone, unwrought.....	2,059	18,680	4,166	14,389	2,853	3,915
Dressed.....		5,365		5,687		17,090
<b>Total.....</b>		<b>170,113</b>		<b>138,392</b>		<b>194,588</b>

Table 510.—Principal Statistics of the Stone Quarrying Industry in Canada, 1922-1926

Year	Number of firms	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Miscellaneous expenses	Selling value of products
		\$		\$	\$	\$	\$
1922.....	162	13,004,233	2,859	2,673,241	*167,139	1,259,552	5,989,864
1923.....	158	13,725,677	2,850	2,665,520	400,517	1,130,639	5,920,578
1924.....	170	14,317,148	2,877	2,768,256	383,800	1,329,233	6,407,757
1925.....	201	12,233,773	4,148	3,599,653	479,489	(a)	7,464,777
1926.....	229	12,760,078	4,510	3,763,726	514,374	(a)	7,865,874

\*Fuel only.

(a) Data not available.

Table 511.—Capital Employed in the Stone Quarrying Industry in Canada, by Provinces, 1925 and 1926

Province	1925				1926			
	Capital employed as represented by				Capital employed as represented by			
	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total	Cost of lands, buildings, plant machinery and tools	Cost of supplies and stock on hand	Cash, trading and operating accounts and bills receivable	Total
	\$	\$	\$	\$	\$	\$	\$	\$
Nova Scotia.....	1,116,909	30,867	9,483	1,157,259	1,133,993	22,968	9,041	1,166,002
New Brunswick...	107,524	33,928	27,574	169,026	128,488	37,172	17,919	183,579
Quebec.....	4,144,979	379,259	696,591	5,220,829	3,772,637	407,020	733,333	4,912,990
Ontario.....	4,421,725	183,074	284,399	4,889,198	4,808,347	290,343	498,879	5,597,569
Manitoba.....	224,394	6,882		231,276	288,553	25,505	40,087	354,145
Alberta.....					4,000		1,300	5,300
British Columbia..	487,685	49,565	28,935	566,185	459,340	46,881	34,272	540,493
<b>Canada.....</b>	<b>10,503,216</b>	<b>683,575</b>	<b>1,046,982</b>	<b>12,233,773</b>	<b>10,595,358</b>	<b>829,889</b>	<b>1,334,831</b>	<b>12,760,078</b>

Table 512.—Employees, Salaries and Wages in the Stone Industry in Canada by Provinces, 1925 and 1926

Province	Average number of employees			Salaries and Wages		
	Salaried employees	Wage-earners	Total	Salaries	Wages	Total
				\$	\$	\$
<b>1925</b>						
Nova Scotia.....	5	108	113	6,938	60,634	67,572
New Brunswick...	9	95	104	12,200	56,296	68,496
Quebec.....	105	2,291	2,396	188,657	1,984,921	2,173,578
Ontario.....	85	1,141	1,226	131,736	819,699	951,435
Manitoba.....	7	82	89	15,242	90,689	105,931
British Columbia..	14	206	220	27,989	204,652	232,641
<b>Canada.....</b>	<b>225</b>	<b>3,923</b>	<b>4,148</b>	<b>382,762</b>	<b>3,216,891</b>	<b>3,599,653</b>
<b>1926</b>						
Nova Scotia.....	6	86	92	8,570	64,585	73,155
New Brunswick...	5	77	82	6,176	53,549	59,725
Quebec.....	124	2,214	2,338	212,061	1,779,026	1,991,087
Ontario.....	86	1,579	1,665	141,076	1,106,621	1,247,697
Manitoba.....	7	140	147	15,449	156,825	172,274
Alberta.....		7	7		6,851	6,851
British Columbia..	13	166	179	28,100	184,837	212,937
<b>Canada.....</b>	<b>241</b>	<b>4,269</b>	<b>4,510</b>	<b>411,432</b>	<b>3,352,294</b>	<b>3,763,726</b>

Table 513.—Wage-Earners in the Stone Industry in Canada, by Months and by Provinces, 1926

Month	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Alberta	British Columbia	Canada
January.....	49	21	1,055	438	90	.....	106	1,759
February.....	52	30	1,146	478	104	.....	122	1,932
March.....	43	41	1,129	560	109	.....	160	2,042
April.....	57	46	1,433	830	91	2	176	2,635
May.....	80	74	1,780	1,310	131	4	168	3,547
June.....	84	79	2,040	1,522	154	4	178	4,061
July.....	87	77	2,116	1,613	192	4	187	4,276
August.....	87	72	2,086	1,530	178	5	160	4,118
September.....	97	77	1,997	1,495	164	12	133	3,975
October.....	94	85	1,922	1,395	163	13	124	3,796
November.....	84	60	1,640	1,071	116	11	128	3,110
December.....	74	64	1,167	632	88	10	106	2,141

Table 514.—Fuel and Electricity Used in the Stone Industry in Canada, 1925 and 1926

		1925		1926	
		Quantity	Value	Quantity	Value
			\$		\$
Anthracite coal.....	tons	881	5,808	625	4,904
Bituminous coal.....	tons	25,956	195,687	28,918	218,617
Lignite coal.....	tons	.....	.....	8	112
Coke.....	tons	125	1,956	337	935
Fuel oil.....	imp. gals.	2,487	580	46,195	3,774
Gasoline.....	imp. gals.	82,491	23,301	103,029	30,899
Wood.....	cords	2,708	13,700	3,981	18,114
Electric power.....	k.w.h.	12,238,662	238,457	10,695,084	237,019
<b>Total.....</b>			<b>479,489</b>		<b>514,374</b>

Table 515.—Power Employed in the Stone Industry in Canada, 1925 and 1926

Description	1925		1926	
	Number of units	Total H.P. according to manufacturers' rating	Number of units	Total H.P. according to manufacturers' rating
Steam engines and turbines.....	217	3,777	184	5,311
Internal combustion engines.....	52	1,089	52	943
Hydraulic turbines or water wheels.....	11	800	11	1,125
<i>Total primary power.....</i>	<i>280</i>	<i>5,666</i>	<i>247</i>	<i>7,379</i>
Electric motors run by purchased power.....	560	18,001	456	15,570
<b>Total power employed.....</b>	<b>840</b>	<b>23,667</b>	<b>713</b>	<b>22,949</b>
Electric motors run by primary power in same plant.....	28	865	52	2,186
<i>Total electric motors.....</i>	<i>588</i>	<i>18,866</i>	<i>518</i>	<i>17,756</i>
Boilers.....	84	4,461	97	4,706



## CHAPTER XI

### DIRECTORY

In the following pages the names and addresses of all the principal operators in the Canadian mining industry are given and the location of the properties worked in 1926 is also shown.

## METAL MINING INDUSTRIES

## Alluvial Gold Mining Industry

Name	Address	Location
<b>BRITISH COLUMBIA</b>		
Ashby, Herbert.....	Keithley Creek.....	Quesnel River.
Browne, John W.....	Atlin.....	Spruce Creek.
Butler, R. F.....	Clinton.....	
Clay, J. R.....	Atlin.....	Spruce Creek.
Cole and Tintinger.....	Atlin.....	Spruce Creek.
Cumberland Placer Mines, Ltd.....	456 Seymour St., Vancouver.....	Tulameen River.
Daly and Johnson.....	Clinton.....	Watson Creek.
Delong, F. L.....	Keithley Creek.....	Quesnel Mining Division.
Discovery Mining and Power Co.....	West 5th, Vancouver.....	Pine Creek.
Donovan Creek Mining Co.....	Cottonwood.....	Donovan Creek.
Drayton, Wm. A.....	Fort Steele.....	
Edens, Harry.....	Stanley.....	Lightning Creek.
Fraser, D. D., and McHardie, Jas.....	Quesnel.....	Quesnel River.
Hartman, Chas., and Gibson, C. T.....	Coalmont.....	Tulameen River.
Howser Bros. and MacDougall.....	Barkerville.....	
Kafoe Copper Development Co., Ltd.....	612 Pacific Bldg., Vancouver.....	Antler Creek.
Malone, Timothy.....	Big Bar.....	
Matthias Gold Mining Co.....	Alaska Bldg., Bellingham, Wash.....	Quesnel River.
Morse, H. O. and Co.....	Discovery.....	Discovery Creek.
Pearse, H. P.....	Birch Creek.....	Birch Creek.
Point Hydraulic Mining Co., Ltd.....	Barkerville.....	Slough Creek.
Quartz Creek Syndicate.....	Golden.....	Porcupine Creek.
Roddick, J. R.....	Barkerville.....	
Ruby, K.....	Coalmont.....	
Similkameen Placers, Ltd.....	713 Dominion Bank Bldg., Vancouver.....	
Sootheran, Garnet.....	Tulameen.....	Tulameen.
Stevens, Joel.....	Barkerville.....	
Williams, James F.....	Stanley.....	Last Chance.
<b>YUKON</b>		
Burrall and Baird, Ltd.....	Dawson.....	
New North West Corporation, Ltd.....	Dawson.....	
North American Transportation and Trading Co.....	Dawson.....	
Weinberg, A. E.....	Miller Creek.....	
Yukon Gold Co.....	120 Broadway, New York, N. Y.....	

## Auriferous Quartz Mining Industry

Name	Address	Name of Mine	Location
<b>NOVA SCOTIA</b>			
Acadia Gold Mines, Ltd., (formerly Oldham Gold Mining Co.).....	704 Power Bldg., Montreal, P.Q.....	Acadia.....	Enfield.
*Bower Mining Co., Ltd.....	Yarmouth.....	Bower.....	Yarmouth Co.
*Cochrane Hill Gold Mining Co.....	682 Barrington St., Halifax.....		Guysborough Co.
Consolidated Mines and Power Co.....	170 Summer St., Boston, U.S.A.....		Goldenville.
Malaga Mining Co., Ltd.....	Malaga.....		Queens Co.
*Papke, Wm.....	St. Peter St., Quebec, P.Q.....	Beaverdam.....	Beaverdam dist.
*Tangier Mining and Power Co., Ltd.....	Tangier.....		Tangier.
<b>ONTARIO</b>			
<i>Boston Creek Area—</i>			
Barry-Hollinger Gold Mines, Ltd.....	807 General Assurance Bldg., Toronto.....	Barry-Hollinger.....	Pacaud Tp.
*Manley-O'Reilly Gold Mines, Ltd.....	17 Main St. E., Hamilton.....	Manley-O'Reilly.....	Boston Creek.
*McMaster, Harry, Syndicate.....	Rosegrove.....	Bulldog.....	Rosegrove.
*Ostrom Gold Mines, Ltd.....	331 Bay St., Toronto.....	Ostrom.....	Boston Creek.
<i>Frontenac County—</i>			
*Ore Chimney Mining Co., Ltd.....	Northbrook.....	Ore Chimney.....	Barrie Tp.
<i>Kirkland Lake Area—</i>			
*Baldwin Gold Mining Co., Ltd.....	134 King St. E., Toronto.....	Lucky Baldwin.....	Kirkland Lake.
*Conroyal Mines, Ltd., (formerly Kirk Gold Mines, Ltd.).....	911 Kent Bldg., Toronto.....	Conroyal.....	Lebel Tp.

\* Operating but not producing.

## Auriferous Quartz Mining Industry—Concluded

Name	Address	Name of Mine	Location
ONTARIO—Concluded			
<i>Kirkland Lake Area—Concluded</i>			
*Kirkland-Hudson Bay Gold Mines, Ltd.	New Liskeard.....	Kirkland-Hudson Bay..	Teck Tp.
*Kirkland Hunton Mines, Ltd.	171 Yonge St., Toronto.....	Kirkland Hunton.....	Teck Tp.
Kirkland Lake Gold Mining Co., Ltd.	810 Lumsden Bldg., Toronto.....	Kirkland Lake.....	Teck Tp.
Lake Shore Mines, Ltd.	Kirkland Lake.....	Lake Shore.....	Teck Tp.
*Sylvanite Gold Mines, Ltd.	Kirkland Lake.....	Sylvanite.....	Teck Tp.
Teck Hughes Gold Mines, Ltd.	Kirkland Lake.....	Teck Hughes.....	Teck Tp.
Tough Oakes Brunside Gold Mines, Ltd.	127 Bay St., Toronto.....	Tough Oakes Burnside..	Teck and Lebel Tps.
Wright Hargreaves Mines, Ltd.	Bridgeburg.....	Wright Hargreaves.....	Teck Tp.
<i>Larder Lake Area—</i>			
Argonaut Consolidated Mines, Ltd.	145 St. James St., Montreal..	Argonaut.....	Gauthier Tp.
*Canadian Associated Goldfields, Ltd.	306 C.P.R. Bldg., Toronto.....	Block "A".....	McVittie Tp.
*Crown Reserve Mining Co., Ltd.	18 Toronto St., Toronto.....	Crown Reserve.....	Larder Lake.
*Northland Gold Mines, Ltd.	Kirkland Lake.....	Northland Gold.....	Gauthier Tp.
*Walsh Katrine Gold Mines, Ltd.	Box 361, Cobalt.....	Walsh Katrine.....	Katrine Tp.
<i>Lightning River Area—</i>			
Blue Quartz Gold Mines, Ltd.	1104 Northern Ontario Bldg., Toronto.	Blue Quartz.....	Painkiller Lake.
<i>Michipicoten Area—</i>			
*Cooper Gold Mines, Ltd.	302 Bay St., Toronto.....	Cooper Gold.....	Michipicoten.
<i>North Western Ontario Area—</i>			
*British Canadian Mines, Ltd.	8 Bloor St. E., Toronto.....	Foley.....	Rainy River Tp.
Champion Gold Mines, Ltd.	329 Chamber of Commerce Bldg., Buffalo, N.Y.	Champion.....	Kenora Dist.
<i>Porcupine Area—</i>			
Ankerite Gold Mines, Ltd.	Box 535, S. Porcupine.....	Ankerite.....	Deloro Tp.
*Coniaurum Mines, Ltd.	50 Ont. St., St. Catharines.....	Coniaurum.....	Tisdale Tp.
Consolidated West Dome Lake Mines, Ltd.	204 McKinnon Bldg., Toronto.	Consolidated West Dome.....	Tisdale Tp.
Dome Mines, Ltd.	36 Toronto St., Toronto.....	Dome.....	Tisdale Tp.
Hollinger Consolidated Gold Mines, Ltd.	Timmins.....	Hollinger.....	Tisdale Tp.
March Gold, Ltd.	White Bldg., Buffalo, N.Y.	March Gold.....	Deloro Tp.
McIntyre Porcupine Mines, Ltd.	602 Standard Bank Bldg., Toronto.	McIntyre Porcupine.....	Tisdale Tp.
Nigh Hawk Peninsular Mines, Ltd.	Bay St., Toronto.....	Nigh Hawk.....	Cody Tp.
Porcupine Paymaster Mines, Ltd.	South Porcupine.....	Paymaster.....	Deloro Tp.
Vipond Consolidated Mines, Ltd.	302 Bay St., Toronto.....	Vipond.....	Tisdale Tp.
<i>Sudbury Area—</i>			
*Mundell, Wm.	Metagama.....	Ina.....	Sudbury Dist.
<i>Thunder Bay Area—</i>			
*Harkness Hayes Gold Mining Co., Ltd.	Schreiber.....	Harkness-Hayes.....	Thunder Bay.
MANITOBA			
Central Manitoba Mines, Ltd.	511 Paris Bldg., Winnipeg.....	Central Manitoba.....	Long Lake Dist.
Eldorado Gold Mines, Ltd.	Bay St., Toronto.....	Eldorado.....	Long Lake Dist.
Mining Corporation of Canada, Ltd.	Bank of Hamilton Bldg., Toronto.	Cryderman.....	Long Lake Dist.
BRITISH COLUMBIA			
B.C. Silver Mines, Ltd.	Pacific Bldg., Vancouver.....	B.C. Silver.....	Portland Canal Mg. Div.
*Bullock Gold Mines, Ltd.	Kaslo.....	Bullock.....	Ainsworth Mining Div.
Director Gold Mining Co., Ltd.	Abbotsford.....	Emancipation.....	Yale Mining Div.
Engineer Gold Mines, Ltd.	120 Broadway, New York, N.Y.	Engineer.....	Atlin Mining Div.
Esperanza Mine	Anyox.....	Esperanza.....	Naas River Mining Div.
Hedley Gold Mining Co., Ltd.	Hedley.....	Nickel Plate.....	Osoyoos Mining Div.
Horn Silver Mining Corporation, Ltd.	Bank of Toronto Bldg., Vancouver.	Horn Silver.....	Osoyoos Mining Div.
Premier Gold Mining Co., Ltd.	Premier.....	Premier.....	Portland Canal Mining Div.
Silverado Mines, Ltd.	Pemberton Bldg., Victoria....	Silverado.....	Portland Canal Mining Div.
Sloan, David	Shalath.....	Pioneer.....	Lillooet Mining Div.
*Windpass Gold Mining Co., Ltd.	Fernie.....	Windpass.....	Kamloops Mining Div.
Yankee Girl, Ltd.	Ymir.....	Yankee Girl.....	Nelson Mining Div.

## Copper-Gold-Silver Mining Industry

QUEBEC			
*Abana Mines, Ltd.	17 St. James St., Montreal....	Abana.....	Desmeloizes Tp.
*Alderson and MacKay	Birks Bldg., Montreal.....	.....	Boischatel Tp.
*Amulet Gold Mines, Ltd.	120 St. James St., Montreal....	Amulet.....	Rouyn, Duprat, Dufresnoy Tps.
*Area Mines, Ltd.	120 St. James St., Montreal....	Area.....	Duprat, Dufresnoy Tps.
*Arntfield Gold Mines, Ltd.	New Birks Bldg., Montreal....	.....	Boischatel Tp.

\* Operating but not producing.

## Copper-Gold-Silver Mining Industry—Continued

Name	Address	Name of Mine	Location
<i>QUEBEC—Concluded</i>			
*Boischatel Mines, Ltd.....	Union Bank Bldg., Ottawa Ont.		Boischatel and Dasserat Tps.
*Brownell Exploration Co.....	50 Church St., New York, N. Y.		Joannes Tp.
*Cadillac Prospectors Syndicate.....	217 Bay St., Toronto, Ont.....		Cadillac and Malartic Tps. Bolton Tp.
*Canadian American Copper Refining Co., Ltd.....	87 Notre Dame St. W., Montreal.		
*Canadian Exploration, Ltd.....	Amos.		Abitibi Co.
*Chance Syndicate.....	1032 Dorchester St. W., Montreal.		Boischatel Tp.
*Coniagas Mines, Ltd.....	50 Ontario St., St. Catharines. Ont.		Boischatel, Duprat, Montbray Tps.
*Consolidated Mining and Smelting Co. of Canada, Ltd.....	Drummond Bldg., Montreal...		Duprat, Boischatel, Hebecourt and Montbray tps.
*Corona Mines, Ltd.....	St. Peter St., Quebec.....	Corona.....	Rouyn Tp.
*Don Rouyn Gold Mines, Ltd.....	14 Hospital St., Montreal.....		Rouyn, Dufresnoy, Malartic and Destor Tps.
*Duprat Mines, Ltd.....	116 St. Peter St., Quebec.....	Duprat.....	Rouyn Tp.
*Eustis Mining Co.....	Eustis.....	Eustis.....	Eastern Townships.
*Fiske Gold Mines, Ltd.....	63 Main St., Hull.....		Rouyn, Boischatel Tps.
*Grover-Daley Mines, Ltd.....	190 St. James St., Montreal...	Grover Daly.....	Rouyn Tp.
*Heron, Chas.....	Box 287, Cobalt, Ont.....		Duprat Tp.
*Horne Copper Corporation.....	120 Broadway, New York N. Y.	Noranda.....	Rouyn Tp.
*Jay Copper Gold Mines.....	189 St. James St., Montreal...		Dalquier Tp.
*Kenoevis Syndicate.....	Temiskaming.....		Rouyn Tp.
*Kerr Lake Mining Co., Ltd.....	61 Broadway, New York, N. Y.		Dufresnoy Tp.
*Knox Wiltsey Syndicate.....	New Liskeard, Ont.....		Rouyn Tp.
*Lake Maron Gold Mines, Ltd.....	Box 506, London, Ont.....	Lake Maron.....	Dasserat Tp.
*Lamothe, J. C.....	St. James St., Montreal.....		
*Lartie Mining Corp.....	Royal Bank Bldg., Toronto...	Lartie.....	Malartic Tp.
*Laurentian Gold Mines, Ltd.....	190 St. James St., Montreal.....		Amos.
*Laval Quebec Mines, Ltd.....	145 St. James St., Montreal.....	Laval.....	Rouyn Tp.
*Malartic Syndicate.....	134 King St. E., Toronto, Ont.	Malartic.....	Malartic Tp.
*Marclay Mines, Ltd.....	Metropolitan Bldg., Toronto, Ont.	Marclay.....	Boischatel Tp.
*Mineral Explorations, Ltd.....	Bank of Hamilton Bldg., Toronto, Ont.		Quebec.
*National Exploration and Holdings Co.....	190 St. James St., Montreal...		Quebec.
*Nipissing Mining Co., Ltd.....	Cobalt.....		Montbray Tp.
*Noranda Mines, Ltd.....	Royal Bank Bldg., Toronto, Ont.		Rouyn and Boischatel Tps.
*Norrington Development Co., Ltd.....	120 St. James St., Montreal...		La Sarre Tp.
*Notre Dame Gold Mines, Ltd.....	15A Notre Dame St., Montreal...		Rouyn Tp.
*O'Brien, M. J.....	Box 939, Cobalt.....		Cadillac Tp.
*Ontabec, Ltd.....	Blackburn Bldg., Ottawa, Ont.		Rouyn, Dufresnoy and Boischatel Tps.
*Osisko Rouyn Exploration Co., Ltd.....	358 Beaver Hall Hill, Montreal...		Rouyn Tp.
*Pioneer Exploration Syndicate.....	New Birks Bldg., Montreal...		Quebec.
*Pioneer Mining Corp., Ltd.....	302 Bay St., Toronto, Ont.....		Quebec.
*Porcupine Goldfields Development and Finance Co., Ltd.....	407 Canada Cement Bldg., Montreal.	Malartic.....	Fournier Tp.
*Quebec Copper Gold Mines, Ltd.....	167 Main St., Hull.....		Boischatel Tp.
*Read, W. A.....	Amos.....		Bourlamaque Tp.
*Renault, Auguste.....	Ville Marie.....		Dasserat Tp.
*Ribago Copper Corp., Ltd.....	Haileybury, Ont.....		Boischatel Tp.
*Siscoe Gold Mines, Ltd.....	St. Catharine St., Montreal...		Dubuisson Tp.
*Sphinx Abitibi Mines Corp.....	93 St. Pierre St., Quebec.....		Barraute Tp.
*Stadacona Rouyn Mines, Ltd.....	St. James St., Montreal.....		Rouyn Tp.
*Success Syndicate.....	Dom. Bank Bldg., Toronto, Ont.		Rouyn Tp.
*Taylor, Chas.....	66 King St., St. Catharines, Ont.		La Reine Tp.
*Thompson Cadillac Mines, Ltd.....	217 Bay St., Toronto, Ont.....		Cadillac Tp.
*Tonopah Canadian Mines Co.....	Cheminis, Ont.....		Boischatel, Duprat, and Montbray Tps.
*Towagmac Exploration Co., Ltd.....	921 New Birks Bldg., Montreal...		Boischatel Tp.
*Union Gold Mines, Ltd.....	Box 222, Amos.....		Dubuisson Tp.
*Vickers Porcupine Mines, Ltd.....	704 Power Bldg., Montreal...		Boischatel and Rouyn Tps.
*Victoria Syndicate, Ltd.....	Coniston, Ont.....		Exploring in Northern Quebec.
*Waite Montgomery Mine.....	Canada Cement Bldg., Montreal.		Duprat Tp.
*Wickham Mining Co., Ltd.....	South Durham.....		Wickham Tp.

\* Operating but not producing.

## Copper-Gold-Silver Mining Industry—Concluded

Name	Address	Name of Mine	Location
BRITISH COLUMBIA			
Belmont Surf Inlet Mines, Ltd.....	626 Pender St. W., Vancouver.	Surf Inlet.....	Skeena Mining Div.
Britannia Mining and Smelting Co., Ltd.	Britannia Beach.....	Britannia.....	Vancouver Mining Div.
Clark, W. J.....	Greenwood.....	Greenwood.....	Greenwood Mining Div.
Consolidated Mining and Smelting Co. of Canada, Ltd.	Trail.....	Centre Star, War Eagle, Le Roi, Josie, White Bear, Boulder City.	Trail Creek Mining Div.
Granby Consolidated Mining, Smelting and Power Co., Ltd.	Anyox.....	Hidden Creek, Golskiesk.	Naas River Mining Div.
		Outsider.	Portland Canal Mining Division.
Paisley Point Mines, Ltd.....	Dom. Bank Bldg., Vancouver.	Allenby.	Similkameen.
*Partridge and Egerton.....	Atlin.....	Paisley Point.....	Skeena Mining Div.
		White Moose and Associated Group.	White Moose Mountain.
Patterson F. T.....	Refuge Bay.....	Patterson.....	Skeena Mining Div.
Rossland Velvet Mines, Ltd.....	Box 421, Rossland.....	Velvet.....	Trail Creek Mining Div.
Schaer, O.....	Taghum.....	Queen Victoria.....	Nelson Mining Div.
Simmons, J. S.....	Box 406, Elko.....	Comet.....	East Kootenay.
*Victoria Syndicate, Ltd.....	Box 122, Kaslo.....	Reeves-McDonald.....	Nelson Mining Div.
*Wallinder, E. G.....	Kamloops.....	Iron Mask.....	Yale Mining Div.

## Silver-Cobalt Mining Industry

ONTARIO			
Agaunico Cobalt Mines, Ltd.....	Box 930, Cobalt.....	Agaunico.....	Bucke Tp.
*Bellelenn Lorrain Mines, Ltd.....	901 Federal Bldg., Toronto.....	Bellelenn Lorrain.....	Silver Centre.
Canadian Lorrain Silver Mines, Ltd.....	302 Bay St., Toronto.....	Canadian Lorrain.....	South Lorrain Tp.
*Casey Mountain Syndicate.....	842 Yonge St., Toronto.....	Casey Mountain.....	Casey Tp.
Castle-Tretheway Mines, Ltd.....	603 Standard Bank Bldg., Toronto.	Castle Tretheway.....	Haultain Tp.
*Cobalt Argyros Mines, Ltd.....	Box 287, Cobalt.....	Cobalt Argyros.....	Coleman Tp.
Cobalt Contact Mines, Ltd.....	8 Bloor St. E., Toronto.....	Cobalt Contact.....	Bucke Tp.
*Coleroy-Gowganda Mines, Ltd.....	272 Bay St., Toronto.....	Coleroy-Gowganda.....	Nicol Tp.
Coniagas Mines, Ltd.....	50 Ontario St., St. Catharines.	Coniagas.....	Coleman Tp.
*Crescent Silver Cobalt Mining Co., Ltd.	100 McKinnon Bldg., Toronto.	Crescent.....	Coleman Tp.
Frontier (Lorrain) Mines, Ltd.....	Bank of Hamilton Bldg., Toronto.	Lorrain Operating and Frontier Lorrain.	Silver Centre.
*Genesee Mining Co., Ltd.....	Cobalt.....	Genesee.....	Cobalt.
*Gowganda-Duggan Silver Mines, Ltd.....	Dominion Bank Bldg., Toronto		Donovan Tp.
*Haultain Mining Co., Ltd.....	145 St. James St., Montreal, P.Q.	Haultain.....	Haultain Tp.
Hudson Bay Mines, Ltd.....	New Liskeard.....	Hudson Bay.....	Cobalt.
Keeley Silver Mines, Ltd.....	302 Bay St., Toronto.....	Keeley.....	South Lorrain Tp.
*Kerr Lake Mining Co., Ltd.....	61 Broadway, New York, N. Y.	Kerr Lake.....	Coleman.
*Kirk Budd Mining Co., Ltd.....	Cobalt.....		Cobalt.
La Rose Mines, Ltd.....	36 King St. E., Toronto.....	La Rose.....	Coleman Tp.
Lorrain Consolidated Mines.....	42 Broadway, New York, N. Y.	Lorrain Consolidated.	Silver Centre.
Lorrain Trout Lake Mines, Ltd.....	Bank of Hamilton Bldg., Toronto.	Lorrain Trout Lake.....	Silver Centre.
McKinley-Darragh-Savage Mines of Cobalt, Ltd.	Cobalt.....	McKinley-Darragh.....	Coleman Tp.
McLeod, J. H.....	Cobalt.....	Foster.....	Coleman Tp.
Mining Corporation of Canada, Ltd.....	Bank of Hamilton Bldg., Toronto.	Buffalo, Townsite City, Cobalt Lake.	Coleman Tp.
*Nine, W. J., Silver Mines, Ltd.....	302 Bay St., Toronto.....	W. J. Nine.....	Nicol Tp.
Nipissing Mining Co., Ltd.....	Cobalt.....	Nipissing.....	Coleman Tp.
O'Brien, M. J., Ltd.....	Cobalt.....	O'Brien.....	Coleman Tp.
		Miller Lake O'Brien.	Gowganda.
*Peterson Cobalt Mines, Ltd.....	Royal Bank Bldg., Toronto.	Peterson Lake.....	Coleman Tp.
Reinhardt, Carl.....	Box 303, Cobalt.....	Crown Reserve.....	Coleman Tp.
Tonopah Canadian Mines Co.	Bullitt Bldg., Philadelphia, Pa.	Walsh, Morrison.....	Gowganda.
Wabi Iron Works, Ltd.....	New Liskeard.....		Cobalt.

\* Operating but not producing.

## Silver-Lead-Zinc Mining Industry

Name	Address	Name of Mine	Location
QUEBEC			
British Metal Corporation.....	263 St. James St., Montreal...	Tetrault.....	Montauban Tp..
*Imrie, John, and Goudreau, P.....	Lake George, New York, N.Y.		St. Fabien
*Yall and Beidelman.....	Drummond Bldg., Montreal...		Lemieux Tp.
*Pioneer Mining Corporation, Ltd.....	302 Bay St., Toronto, Ont.		Gaspé Co.
ONTARIO			
Kingdon Mining, Smelting and Mfg. Co., Ltd.	314 Beaver Hall Hill, Montreal	Kingdon.....	Galetta.
*Summersville Lead Mines, Ltd.....	21 King St. E., Toronto.		Somersville Tp.
*Treadwell Yukon Co., Ltd.....	Crocker Bldg., San Francisco, Cal.	Errington.....	Sudbury.
BRITISH COLUMBIA			
<i>Ainsworth Mining Division—</i>			
Allen, W. J., and Williams, W. G.....	Nelson.....	Silver Hill.....	Carwford Bay.
Charleston Mining Co., Ltd.....	Zincton.....	Charleston.....	Retallack.
Cork Province Mines, Ltd.....	Kaslo.....	Cork Province.....	Zwicky.
Fowler and Eastman.....	Riondel.....	Bluebell.....	Riondel.
Hawley, W. S.....	Hutton Bldg., Spokane, Wash.	Silver Hoard.....	Ainsworth.
McPherson and Bridge.....	Ainsworth.....	Spokane Trinket.....	Ainsworth.
*Nordman, Edward.....	Beaverdell.....	Lavina.....	Ainsworth.
Peterson, E., and Dumas, F.....	Ainsworth.....	Tariff.....	Ainsworth.
Whitewater Mines, Ltd.....	Kaslo.....	Whitewater.....	Retallack.
<i>Atlin Mining Division—</i>			
Atlin Silver Lead Mines.....	Atlin.....	Ruffner Group.....	Atlin.
(J. M. Ruffner.)			
<i>Fort Steele Mining Division—</i>			
Aurora Syndicate.....	Box 42, Moyie.....	Aurora.....	Fort Steele.
Consolidated Mining and Smelting Co. of Canada, Ltd.	Trail.....	Sullivan, St. Eugene.....	Moyie.
Porcupine Goldfields, Development and Finance Co., Ltd.	Kimberley.....	Stemwinder.....	Kimberley.
<i>Greenwood Mining Division—</i>			
Beaver Silver Mines, Ltd.....	Pemberton Bldg., Victoria...	Beaver.....	Beaverdell.
Clark, W. J.....	Greenwood.....	Imperial.....	Rock Creek.
Davis, S. B.....	Beaverdell.....	Sally and Bounty.....	Beaverdell.
Duhamel, J. H.....	Greenwood.....	Crescent.....	Greenwood.
Elkhorn Mines, Ltd.....	Greenwood.....	Elkhorn Fraction.....	Greenwood.
*Highland Chief Mining Co., Ltd.....	Penticton.....	Highland Chief.....	Beaverdell.
McIntosh and Lee.....	Beaverdell.....	Bell.....	Wallace Mountain.
Sally Mines, Ltd.....	Box 220, Penticton.....	Sally.....	Wallace Mountain.
Wellington Syndicate.....	Greenwood.....	Wellington.....	Beaverdell.
<i>Kamloops Mining Division—</i>			
Bell, W. L.....	Box 341, Kamloops.....	Homestake.....	Kamloops.
Smuggler Hill Development Co., Ltd.	Kamloops.....	Smuggler Hill.....	Kamloops.
<i>Lardeau Mining Division—</i>			
*Lardeau Mines Exploration, Ltd.....	North West Bldg., Vancouver.	Moscow and Paymaster.....	Lardeau.
Multiplex Mining, Milling and Power Co., Ltd.	Beaton.....	Multiplex.....	Lardeau.
*Teddy Glacier Mines, Ltd.....	8th Ave. E., Vancouver.....	Teddy Glacier.....	Sable Creek.
<i>Lillooet Mining Division—</i>			
*Li Li Kel Mine.....	910 Birks Bldg., Vancouver...	Li Li Kel.....	Lillooet.
<i>Nanaimo Mining Division—</i>			
*Glasord Mining Corporation, Ltd.....	311 North West Bldg., Vancouver.	Glasord.....	Nanaimo.
<i>Nass River Mining Division—</i>			
Alice Arm La Rose Mining Co.....	Box 203 Prince Rupert.....	La Rose.....	Nass River.
<i>Nelson and Arrow Lake Mining Division—</i>			
*Iron Mountain, Ltd.....	Nelson.....	Emerald.....	Salmo.
Molander, A.....	Trail.....	Molly Gibson.....	Nelson.
Porcupine Goldfields Development and Finance Co., Ltd.	Kimberley.....	Goodenough, Alice.....	Nelson.
Schootzenbauer, C. and Knabe, P.....	Box 187, Rossland.....	Blue Bird.....	Arrow Lakes.
*Shepherd Mining Co., Ltd.....	Kaslo.....	Kirby.....	Riondel.
<i>Nicola Mining Division—</i>			
Planet Mines and Reduction Co. of Nicola, Ltd.	Standard Bank Bldg., Vancouver.	Planet.....	Nicola.
<i>Omineca Mining Division—</i>			
Duthie Mines, Ltd.....	Smithers.....	Duthie.....	Smithers.
<i>Osoyoos Mining Division—</i>			
Bowden, Fred.....	Similkameen.....	Silver Star.....	Osoyoos.
<i>Portland Canal Mining Division—</i>			
*Big Missouri Mine.....	Perkins Bldg., Tacoma, Wash.	Big Missouri.....	Stewart.
*Chief Metals Co.....	1812 C. L. Smith Bldg., Seattle Washington.	Chief Metals.....	Slate Mountain.
Dunwell Mines, Ltd.....	101 Pemberton Bldg., Victoria	Danwell.....	Stewart.
*Marmot Metals Mining Co., Ltd.....	Box 102, Stewart.....	Marmot Metals.....	Portland Canal.
Outland Silver Bar Mines, Ltd.....	1210 Western Ave., Seattle, Wash.	Outland Silver Bar.....	Stewart.
Porter Idaho Mining Co., Ltd.....	Stewart.....	Porter Idaho.....	Portland Canal.
Prosperity Syndicate.....	Stewart.....	Prosperity.....	Marmot River.

\* Operating but not producing.

## Silver-Lead-Zinc Mining Industry—Concluded

Name	Address	Name of Mine	Location
<b>BRITISH COLUMBIA—Concluded</b>			
<i>Portland Canal Mining Division—Con.</i>			
*Silver Tip Mining Development Co., Ltd.	323 Saward Bldg., Victoria.....	Silver Tip.....	Salmon River.
<i>Similkameen and Trail Creek Mining Division—</i>			
Ladl Bros. and Otto.....	501 Gorge Rd., Victoria.....	Renfrew Group.....	Siwash Creek.
Lynden Mining Syndicate.....	Tulameen.....	Eureka.....	Similkameen.
<i>Slocan and Slocan City Mining Division—</i>			
*American Boy Mining Co.....	Box 171, Sandon.....	Sovereign and American Boy.....	Sandon.
Bigelow Bay Mining Syndicate.....	New Denver.....	Molly Hughes.....	New Denver.
Brandon, Joseph.....	Sandon.....	Canadian.....	Sandon.
Cechelero, J., Zattoni, M. and Beber J.....	New Denver.....	Mountain Chief.....	New Denver.
*Corinth Silver Lead Mines Co.....	1102 Post St., Seattle, Wash.....	Corinth.....	Sandon.
Cunningham Mines, Ltd.....	Alamo.....	Alamo Queen, Bess.....	Alamo.
		Sovereign, Wonderful.....	Sandon.
		Van Roi.....	Silverton.
		Trade Dollar.....	Slocan.
		Rico and No. 1.....	Sandon.
		Metallic.....	Slocan.
		Leadsmith.....	Sandon.
		Noble Five.....	Slocan.
		Lucky Jim.....	Zincton.
*Mary Ryan Mines, Ltd.....	431 Exchange Bank Bldg., Spokane, Wash.....	Soho.....	Slocan.
Porcupine Goldfields Development and Finance Co., Ltd.	Kimberley.....	Galena, Mammoth.....	Silverton.
Rosebery Surprise Mining Co., Ltd.....	New Denver.....	Surprise, Monitor, Bosun.....	New Denver.
Ruth Hope Mining Co., Ltd.....	Kaslo.....	Ruth Hope.....	Sandon.
Silversmith Mines, Ltd.....	Box 1772, Sandon.....	Silversmith.....	Sandon.
Singel Lafreniere Dacquay.....	Sandon.....	Colonial.....	Slocan.
Slocan Silver Mines, Ltd.....	Three Forks.....	McAllister.....	Carpenter Creek.
Standard Silver Lead Mining Co.....	Silverton.....	Standard.....	Silverton.
Vandergrift, E. J.....	Sandon.....	Black Colt.....	Sandon.
Victoria Syndicate, Ltd.....	Box 122, Kaslo.....	Carnation Group.....	Sandon.
Wragge, E., and Maguire, P.....	Box 1094, Nelson.....	Enterprise.....	Slocan.
<i>Vernon Mining Division—</i>			
Logie, J. W. S.....	West Summerland.....	Kelly.....	Vernon.
<i>Windermere Mining Division—</i>			
Bruce, R. R.....	Invermere.....	Paradise.....	Windermere.
Victoria Syndicate, Ltd.....			
Drayton, W. A.....	Fort Steele.....	Key.....	Wilmer.
Galena Ghat Mines, Ltd.....	Invermere.....	White Cat.....	Slade Creek.
Larrabee, A. M.....	Wilmer.....	Daisy.....	Windermere.
Lead Queen Mine (c/o F. M. Simonds)	Brisco.....	Lead Queen.....	Frances Creek.
*Pacific Mines, Petroleum and Development Co., Ltd.	608 Pacific Bldg., Vancouver.....	Monarch.....	Field.
Silver Spray Mining Co., Ltd.....	1405 Dominion Bank Bldg., Vancouver.....	Silver Spray.....	Windermere.
*Soatag, V.....	6504-39th Ave., Seattle, Wash.....	Silver King and Maple Leaf.....	Windermere.
Stoddart, E.....	Windermere.....	Star.....	Toby Creek.
<b>YUKON</b>			
Keno Hill Ltd.....	120 Broadway, New York, N.Y.....	Keno Hill.....	Mayo Mining District.
Settlemier and Birmingham.....	Keno City.....	Star.....	Mayo Mining District.
Treadwell Yukon Co., Ltd.....	Crocker Bldg. San Francisco, Cal.....	Treadwell-Yukon.....	Mayo Mining District.
Williamson and Hargraves.....	Keno City.....	Fisher Claim.....	Mayo Mining District.

## Nickel-Copper Industry

<b>ONTARIO</b>			
*International Nickel Co. of Canada, Ltd.	67 Wall St., New York, N.Y.....	Creighton, Frood.....	Snider and McKim Tps.
Mond Nickel Co., Ltd.....	Coniston.....	Garson, Frood Extension, Worthington, Levack.....	Garson, McKim, Drury and Levack Tps.

\* Operating but not producing.

Miscellaneous Metal Mining Industries

(a) Iron Mining Industry

Name	Address	Name of Mine	Location
QUEBEC			
Manitou Iron Mining Co.....	1465 Bleury St., Montreal.....	Manitou.....	Beresford Tp.

(b) Molybdenum Mining Industry

QUEBEC			
Henry E. Wood Mining Co., Ltd.....	Quyon.....	Moss.....	Onslow Tp.

Non-Ferrous Smelting and Refining Industry

QUEBEC			
Aluminum Co. of Canada, Ltd.....	46 King St. W., Toronto, Ont. ....		Shawinigan Falls and Arvida.
ONTARIO			
Deloro Smelting and Refining Co., Ltd.	Deloro.....		Deloro.
International Nickel Co. of Canada, Ltd.	67 Wall St., New York, U.S.A. ....		Copper Cliff, Port Colborne.
Kingdon Mining, Smelting and Manufacturing Co., Ltd.	Galetta.....		Galetta.
Mond Nickel Co., Ltd.....	Coniston.....		Coniston.
BRITISH COLUMBIA			
Consolidated Mining and Smelting Co. of Canada, Ltd.	Trail.....		Trail.
Granby Consolidated Mining, Smelting and Power Co., Ltd.	Anyox.....		Anyox.

## NON-METAL MINING INDUSTRIES INCLUDING FUELS

## FUELS

## Coal Mining Industry

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Acadia Coal Co., Ltd.	Stellarton	District— Pictou.
Boston Coal Co.	River Hebert	Cumberland.
Bras d'Or Coal Co.	Little Bras d'Or Bridge	Cape Breton.
Canadian Coal Co., Ltd.	Halifax	Cumberland.
Carter Coal Co.	Maccan	Cumberland.
Cumberland Ry. and Coal Co.	Glace Bay	Cumberland.
Dominion Coal Co., Ltd.	Glace Bay	Cape Breton.
Emmerson Coal Co., Ltd.	River Hebert	Cumberland.
Enterprise Coal Co., Ltd. (formerly Lawson Coal Co.)	Maccan	Cumberland.
Fundy Mining Co.	Joggins Mines	Cumberland.
Greenwood Coal Co., Ltd.	Thorburn	Pictou.
Indian Cove Coal Co., Ltd.	Sydney Mines	Cape Breton.
Intercolonial Coal Mining Co., Ltd.	Westville	Pictou.
Inverness Ry. and Coal Co.	Inverness	Inverness.
Maritime Coal, Ry. and Power Co., Ltd.	Joggins Mines	Cumberland.
National Coal Co.	New Glasgow	Cumberland.
Nova Scotia Steel and Coal Co.	Sydney Mines	Cape Breton.
Phoenix Coal Co., Ltd.	Amherst	Cun berland.
River Hebert Coal Co.	River Hebert	Cumberland.
Victoria Coal Co. Ltd. (operating No. 2 Mine, Minudie Coal Co.)	River Hebert	Cumberland.
<b>NEW BRUNSWICK—</b>		
Avon Coal Co., Ltd.	St. John	County— Queens.
Minto Coal Co., Ltd.	St. John	Queens.
Miramichi Lumber Co., Ltd.	Minto	Queens.
Rothwell Coal Co., Ltd.	Rothwell	Sunbury.
Welton, Harvey	Minto	Queens.
Welton & Henderson	Minto	Queens.
<b>SASKATCHEWAN—</b>		
Bienfait Mine	Bienfait	Municipality— Near Bienfait.
Big Lump Coal Co. (formerly Bourguin & Smith).	Estevan	Near Estevan.
Bourguin, Louis	Estevan	Near Estevan.
Crescent Collieries, Ltd.	Bienfait	Near Bienfait.
Eastern Collieries of Bienfait, Ltd.	Estevan	Near Estevan.
Lignite Coal Mines, Ltd. (formerly Andrew A. Miller)	Taylorlton	Taylorlton.
Manitoba and Saskatchewan Coal Co., Ltd.	503 Avenue Block, Winnipeg, Man.	Bienfait.
Shand Coal and Brick Co.	Shand	Shand.
Western Dominion Collieries, Ltd.	305 Trust and Loan Bldg., Winnipeg, Man.	Taylorlton.
<b>ALBERTA—</b>		
<i>Bituminous—</i>		
Blue Diamond Coal Co., Ltd.	602 Standard Bank Bldg., Toronto, Ont.	District— Brule.
Brazeau Collieries, Ltd.	Nordeg.	Nordeg.
Cadomin Coal Co., Ltd.	282 Main St., Winnipeg, Man.	Mountain Park.
Canmore Coal Co., Ltd.	Canmore	Cascade.
Hillcrest Collieries, Ltd.	Hillcrest	Crowsnest.
International Coal and Coke Co., Ltd.	Coleman	Crowsnest.
Luscar Collieries, Ltd.	708 Tegler Bldg., Edmonton	Mountain Park.
McGillivray Creek Coal and Coke Co., Ltd.	Coleman	Crowsnest.
Mohawk Bituminous Mines, Ltd.	414 Lancaster Bldg., Calgary	Crowsnest.
Mountain Park Collieries, Ltd.	708 Tegler Bldg., Edmonton	Mountain Park.
Pass Bituminous Collieries, Ltd.	Burmis	Crowsnest.
West Canadian Collieries, Ltd.	Blairmore	Crowsnest.
<i>Sub-Bituminous—</i>		
Alexo Coal Co., Ltd.	Alexo	Saunders.
Balkan Coal Co., Ltd.	Robb	Coalspur.
Bighorn and Saunders Creek Collieries, Ltd.	Saunders	Saunders.
Bryan Coal Co., Ltd.	Adams Bldg., Edmonton	Coalspur.
Coal Valley Mining Co., Ltd.	806 McLeod Bldg., Edmonton	Coalspur.
Elkhead Collieries, Ltd. (formerly Reco Hard Coal Co.)	Reco	Coalspur.
Foothills Collieries, Ltd.	222 Portage Ave., Winnipeg, Man.	Coalspur.
Northern Alberta Mines, Ltd. (formerly A. Dino and Co.)	Lovett	Coalspur.
Saunders Ridge Coal Co., Ltd.	Mercoal	Coalspur.
Saunders West Collieries, Ltd. (formerly Stanley, C. H.)	West Saunders	Saunders.
Sterling Collieries, Ltd.	911 McLeod Bldg., Edmonton	Coalspur.

## Coal Mining Industry—Continued

Name	Address	Location
<b>ALBERTA—Continued</b>		
<i>Lignite—</i>		
Ajax Coal Co., Ltd.	Medicine Hat	District— Redcliff.
Alberta Block Coal Co., Ltd.	Drumheller	Drumheller.
Anderson, W. J.	Sheerness	Sheerness.
Atlas Coal Co., Ltd.	Drumheller	Drumheller.
Banner Coal Co., Ltd. (formerly National Col- lieries, Ltd.)	Round Hill	Camrose.
Bay Coal Co., Ltd.	Taber	Taber.
Big Valley Collieries, Ltd.	Big Valley	Big Valley.
Caledonian Collieries, Ltd.	Drumheller	Drumheller.
Campbell & Hutchinson (formerly Common- wealth Coal Co.)	Sheerness	Sheerness.
Canadian Coal Co., Ltd.	206 Quebec Bldg., Edmonton	Edmonton.
Canadian Dinant Coal Co.	Dinant	Camrose.
Canadian Pacific Railway Co.	Dept. of Natural Resources, Calgary	Lethbridge.
	Carbon	Taber.
Chappell Coal Co., Ltd.	Tofield	Carbon.
City of Lethbridge Coal Mines	Lethbridge	Tofield.
Consolidated Diamond Collieries, Ltd.	Lethbridge	Lethbridge.
Craig Coal Co., Ltd.	Drumheller	Lethbridge.
Davidson, Mrs. A. J. (formerly Ferndale Col- lieries, Ltd.)	5650 Ada Blvd., Edmonton	Drumheller.
Dawson Coal Co., Ltd.	7 McDougall Court, Edmonton	Edmonton.
Dobell Coal Co., Ltd.	138 St. Peter St., Quebec, Que.	Edmonton.
Donaldson, C. S. Coal Co.	Suite 1, Hill Block, Lethbridge	Tofield.
Elgin Coal Co., Ltd.	Drumheller	Lethbridge.
Ellis Coal Co., Ltd.	Box 46, Three Hills	Drumheller.
Excelsior Collieries, Ltd.	Wayne	Carbon.
Fraser-McKay Collieries, Ltd.	10055-101st St., Edmonton	Drumheller.
Great West Coal Co., Ltd. (Black Diamond Mine)	11026-101st Ave., Edmonton	Edmonton.
Great West Coal Co., Ltd. (Star Mine)	Aerial	Drumheller.
Hy-Grade Coal Co.	Drumheller	Edmonton.
Ideal Coal Co., Ltd.	Wayne	Drumheller.
Jewel Collieries, Ltd.	Wayne	Drumheller.
Kleenbirt Collieries, Ltd.	Eyremore	Brooks.
Lakeside Coals, Ltd.	711 Tegler Bldg., Edmonton	Pembina.
Leland Coal Co., Ltd. (formerly Majestic Col- lieries, Ltd.)	Taber	Taber
Marcus Coal Mines, Ltd.	10366-104th St., Edmonton	Edmonton.
McLenhan, John A. and Co. (formerly Spicer Coal Co., Ltd.)	Dinant	Edmonton.
Midland Coal Mining Co., Ltd.	Midlandvale	Camrose.
Mid-West Collieries, Ltd.	Drumheller	Drumheller.
Newcastle Coal Co., Ltd.	Drumheller	Drumheller.
Newcastle Junior Mining Co.	Drumheller	Drumheller.
North American Collieries, Ltd.	909 Lancaster Bldg., Calgary	Lethbridge.
Ontalta Collieries, Ltd. (formerly Capital Col- lieries, Ltd.)	Rosedale Station	Pembina.
Ottewell Coal Co.	Clover Bar	Drumheller.
Palisade Coal Co.	Three Hills	Edmonton.
Parker Creek Collieries, Ltd. (formerly Ardley Hardite Collieries, Ltd.)	Ardley	Carbon.
Partridge Coal Co.	Rosedale Station	Ardley.
Peerless Carbon Coal Mines Ltd. (Consolidated with Peerless Carbon Collieries, Ltd.)	Carbon	Drumheller.
Penn Mine Coal Co., Ltd. (formerly Crown Coal Co.)	10, 651-92nd St., Edmonton	Carbon.
Penn Mines, Ltd. (formerly Edmonton Col- lieries, Ltd.)	Fraser Flats, Edmonton	Edmonton.
Premier Coal Co., Ltd. (formerly Reed & Brown)	109th Ave., Edmonton	Edmonton.
Rosedale Coal Co., Ltd.	Rosedale	Edmonton.
Rose Deer Coal Mining Co., Ltd.	Wayne	Drumheller.
Royal Lethbridge Collieries	Hardieville	Drumheller.
Shannon Coal Co., Ltd.	Carbon	Lethbridge.
Stoney Creek Collieries, Ltd.	Camrose	Carbon.
Sturgeon Valley Collieries, Ltd.	Carbonvale	Camrose.
Sun Coal Co., Ltd. (formerly North Star Coal Co.)	Cardiff	Edmonton.
Sunbeam Coal Co., Ltd. (formerly Challenger Coal Co., Ltd.)	Ardley	Edmonton.
Superior Grade Coal Co., Ltd.	Wayne	Ardley.
Thomas, J. D. Coal Co.	Naemine	Drumheller.
Tofield Coal Co., Ltd.	Tofield	Drumheller.
Warneboldt, Julius	Sheerness	Tofield.
Western Commercial Co., Ltd.	Wayne	Sheerness.
Western Gem Coal Co., Ltd.	Drumheller	Drumheller.
<b>BRITISH COLUMBIA—</b>		
Canadian Collieries (Dunsmuir), Ltd.	600 Belmont Bldg., Victoria	Island.
Coalmont Collieries, Ltd.	Coalmont	Inland.
Corbin Coals, Ltd.	Corbin	Crow's Nest Pass.

## Coal Mining Industry—Concluded

Name	Address	Location
<b>BRITISH COLUMBIA—Concluded.</b>		
Crow's Nest Pass Coal Co.....	Fernie.....	District— Crow's Nest Pass.
East Wellington Coal Co.....	Box 250, Victoria.....	Island.
Fleming Coal Co., Ltd.....	Merritt.....	Inland.
Granby Consolidated Mining, Smelting and Power Co., Ltd.....	Cassidy.....	Island.
Keystone Coal Co., Ltd.....	Merritt.....	Inland.
Middlesboro Collieries, Ltd.....	Middlesboro.....	Inland.
Nanoose Wellington Collieries, Ltd.....	Wellington.....	Island.
Tulameen Valley Coal Mine.....	Princeton.....	Inland.
Western Fuel Corporation of Canada, Ltd.....	Nanaimo.....	Island.

## Natural Gas Industry

<b>NEW BRUNSWICK—</b> New Brunswick Gas and Oilfields, Ltd.....	Box 196, Moncton.....	<i>Field</i> Stony Creek, Albert co.
<b>ONTARIO—</b>		
Allied Gas and Oil Co.....	Welland.....	<i>Township</i> Moulton.
Attercliffe Gas Co.....	Attercliffe.....	Canboro.
Beer, Geo.....	Binbrook.....	Binbrook.
Benn, A. S.....	Hagersville.....	Walpole.
Bennett, J. B.....	Ridgetown.....	Howard.
Binbrook Gas Co.....	Binbrook.....	Binbrook.
Canada Cement Co., Ltd.....	Montreal, Que.....	Wainfleet.
Canby, B. F.....	R. R. 2, Wainfleet.....	Wainfleet.
Canboro Gas and Oil Co.....	Selkirk.....	Canboro, Cayuga N., and Seneca.
Canfield Natural Gas Co.....	Canfield.....	Cayuga, N.
Castle Oil and Gas Co.....	Imperial Bank Chambers, Niagara Falls.....	Euphemia.
Chippawa Development Co., Ltd.....	Chippawa.....	Willoughby.
Chippawa Oil and Gas Co., Ltd.....	Tavistock.....	Caistor and Gainsboro.
Cliff Gas Co.....	Welland.....	Moulton.
Coleman, J. A.....	Wellandport.....	Wainfleet and Gainsboro.
Dominion Natural Gas Co., Ltd.....	518 Jackson Bldg., Buffalo, N.Y.....	Bayham, Binbrook, Caistor, Canboro, Cayuga N., Cayuga, S., Charlotteville, Dunn, Glan- ford, Houghton, Humberstone, Malahide, Middleton, Moulton, Oakland, Oneida, Onondaga, Rainham, Seneca, Townsend, Walpole, Walsingham N., Walsingham S., Windham, Woodhouse.
Dunn Natural Gas Co., Ltd.....	Dunnville.....	Dunn and Sherbrooke.
Eastside Gas Co.....	R. R. 2, Lowbanks.....	Sherbrooke.
Ellsworth, F.....	Port Colborne.....	Wainfleet.
Empire Limestone Co.....	19 Hudson St., Buffalo, N.Y.....	Humberstone.
Erie Gas and Oil Syndicate.....	Fisherville.....	Rainham.
Fisherville Gas Co.....	Fisherville.....	Rainham.
Hart and Harrington.....	Dunnville.....	Canboro.
Hoffman, Albert.....	Dunnville.....	Moulton.
Hoover, J. E.....	Selkirk.....	Walpole.
Industrial Natural Gas Co., Ltd.....	Thorold.....	Bertie, Crowland, Humberstone.
Jaspersen, B.....	Kingsville.....	Gosfield South and Tilbury East
Jones, J. S.....	Port Maitland.....	Dunn.
Kindy, D. and Son.....	Selkirk.....	Rainham.
Lawson, J. J., Mrs.....	Stromness.....	Moulton.
Lincoln Gas Co., Ltd.....	Canboro.....	Gainsboro.
Marshall, Jas.....	Hamilton.....	Glanford and Seneca.
Medina Natural Gas Co., Ltd.....	215 King St., Chatham.....	Bayham, Houghton and Middle- ton.
Michener, E. L.....	Wainfleet.....	Wainfleet.
Midfield Gas Co., Ltd.....	9 Maple Ave., Hamilton.....	N. Cayuga and Oneida.
Nelles Corners Gas Syndicate.....	Nelles Corners.....	Cayuga N. and Rainham.
New Azoff Gas Co., Ltd.....	Canboro.....	Cayuga, N.
Niece, Hosea and Son.....	Lowbanks.....	Sherbrooke.
Northern Gas and Gasoline Co.....	Hepworth.....	Amabel.
North Shore Gas Co., Ltd.....	Selkirk.....	Rainham.
Oil Springs Oil and Gas Co., Ltd.....	Oil Springs.....	Enniskillen.
Onondaga Oil and Gas Co.....	Brantford.....	Onondaga.
Patterson, W. C.....	Jamestown, N.Y., U.S.A.....	Cayuga N., Cayuga S., and Dunn
Petrol Oil and Gas Co., Ltd.....	301 York Bldg., Toronto.....	Dover West.
Pilkington Bros., Ltd.....	St. Catharines.....	Crowland.
Port Colborne-Welland Natural Gas and Oil Co. Ltd.....	Port Colborne.....	Oneida, Onondaga and Seneca.
Provincial Natural Gas & Fuel Co. of Ontario, Ltd.....	103 Queen St., Niagara Falls.....	Bertie, Crowland, Humberstone and Willoughby.

## Natural Gas Industry—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		<i>Field</i>
Rainham Gas and Oil Syndicate.....	Fisherville.....	Rainham.
Root, Mrs. Esther.....	Dunnville.....	Cayuga, S.
Sarnia Gas and Oil Co.....	145½ Front St., Sarnia.....	Sarnia.
Smith, R. H.....	Lowbanks.....	Moulton.
Southern Ontario Gas Co., Ltd.....	518 Jackson Bldg., Buffalo, N.Y.....	Mersea, Raleigh, Romney and Tilbury East.
South Sarnia Properties, Ltd.....	Sarnia.....	Sarnia.
Sparham, A. F.....	Caledonia.....	Glanford.
Springvale Gas and Oil Co., Ltd.....	Hagersville.....	Walpole.
Sterling Gas Co., Ltd.....	Port Colborne.....	Humberstone, Moulton, Sherbrooke and Wainfleet.
Stevensville Natural Gas and Fuel Co., Ltd.....	Stevensville.....	Bertie.
Sundy Gas Well Co.....	Dunnville.....	Canboro.
Union Natural Gas Co. of Canada, Ltd.....	48½ Market St., Chatham.....	Dawn, Dover W., Raleigh, Romney and Tilbury E.
United Gas Companies, Ltd.....	518 Jackson Bldg., Buffalo, N.Y.....	Canboro, Cayuga N., Moulton, Seneca and Wainfleet.
Vacuum Gas and Oil Co., Ltd.....	719 Federal Bldg., Toronto.....	Middleton.
Van Sickle, A. W.....	Onondaga.....	Onondaga.
Wainfleet-Moulton Gas Co.....	R.R. 1, Lowbanks.....	Moulton and Wainfleet.
<b>MANITOBA—</b>		
Bosc, Francois.....	Rathwell.....	Rathwell.
Haskill, E. C.....	Box 64, Treherne.....	Treherne.
<b>ALBERTA—</b>		
Alberta Clay Products Co., Ltd.....	Box 672, Medicine Hat.....	Medicine Hat.
British Petroleums, Ltd.....	918 Rogers Bldg., Vancouver, B.C.....	Wainwright.
Canada Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal, P.Q.....	Dauntless.
Canadian Pacific Railway Co.....	Montreal, P.Q.....	Medicine Hat.
Canadian Western Natural Gas, Light, Heat and Power Co., Ltd.....	215-6th Ave., West, Calgary.....	Bow Island and Foremost.
Canadian Western Power and Fuel Co.....	Redcliff.....	Redcliff.
Dominion Glass Co., Ltd.....	285 Beaver Hall Hill, Montreal, P.Q.....	Redcliff.
Edmonton-Wainwright Oils, Ltd.....	Wainwright.....	Wainwright.
Hedley Shaw Milling Co., Ltd.....	Medicine Hat.....	Medicine Hat.
Higgins-Suffield Gas Co.....	Suffield.....	Suffield.
Maple Leaf Oil Co.....	319 Pender St W., Vancouver, B.C.....	Many Island Field.
Medicine Hat, Corporation of.....	Medicine Hat.....	Fabyan-Wainwright.
Northwestern Utilities, Ltd.....	10305 Jasper Ave., Edmonton.....	Medicine Hat.
Northwest Co., Ltd.....	56 Church St., Toronto, Ont.....	Viking.
Ogilvie Flour Mills Co., Ltd.....	Medicine Hat.....	Erickson Coulee.
Redcliff Brick and Coal Co., Ltd.....	Redcliff.....	Medicine Hat.
Royalite Oil Co., Ltd.....	239-6th Ave. W., Calgary.....	Redcliff.
Town of Bow Island.....	Bow Island.....	Turner Valley.
United Electric and Engineering Co., Ltd.....	1721-11th St. West, Calgary.....	Bow Island.
Vulcan Oils, Ltd.....	Vulcan.....	Bassano.
Wainwright Gas Co., Ltd.....	206 Quebec Bldg., Edmonton.....	Turner Valley.
Wetaskiwin, Corporation of.....	Wetaskiwin.....	(Distributing Company.) Wetaskiwin.

## Petroleum Industry

<b>NEW BRUNSWICK—</b>		<i>Field</i>
New Brunswick Gas and Oil Fields, Ltd.....	Box 196, Moncton.....	Stoney Creek, Albert County.
<b>ONTARIO—</b>		
Anderson Bros. & Thompson.....	Oil Springs.....	Oil Springs.
Anderson, J. H.....	Oil Springs.....	Oil Springs.
Armstrong, J. E.....	Petrolia.....	Moore.
Atkinson, John.....	R.R. No. 3, Petrolia.....	Plympton.
Barrett, C. H.....	Petrolia.....	Enniskillen.
Bowles, Herbert.....	Petrolia.....	Sarnia.
Bradley, R. N.....	Lowbanks.....	Enniskillen.
Brock, Thos. A.....	Petrolia.....	Enniskillen.
Buck, G. L. (Bothwell Oil Co.).....	Bothwell.....	Bothwell.
Byers, Lydia (Executrix).....	Oil Springs.....	Oil Springs.
Canada Crude Oil Producers, Ltd.....	Confederation Life Bldg., Toronto.....	Enniskillen, Oil Springs.
Canadian Dutch Oils, Ltd.....	7 Adelaide St. E., Toronto.....	Onondaga.
Canadian Oil Producing and Refining Co., Ltd.....	Petrolia.....	Enniskillen, Oil Springs.
Canadian Oil Refineries, Ltd.....	Toronto.....	Onondaga.
Carleton, W. G.....	R.R. No. 2, Petrolia.....	Enniskillen.
Carman and Fairbank.....	Petrolia.....	Bothwell.
Chesher, Geo.....	Petrolia.....	Sarnia.
Colchester Oil and Gas Co.....	Federal Bldg., Toronto.....	Thamesville.
Crocker-Parks Oil Co., Ltd.....	Oil Springs.....	Oil Springs.
Crotty and Elliott.....	Bothwell.....	Bothwell.
Deacon, F. W.....	Petrolia.....	Enniskillen.
Dennis, C.....	Oil Springs.....	Oil Springs.

## Petroleum Industry—Continued

Name	Address	Location
<b>ONTARIO—Concluded</b>		<i>Field</i>
Dennis, E.	Petrolia.	Plympton.
Dominion Natural Gas Co., Ltd.	518 Jackson Bldg., Buffalo, N.Y., U.S.A.	Onondaga.
Dominion Petroleum Co., Ltd.	Glencoe.	Mosa.
Donald, Geo.	Oil Springs.	Oil Springs.
Duncan Bros.	Petrolia.	Moore.
Edward, F. H.	Petrolia.	Enniskillen.
Elliott, C. H.	Corunna.	Sarnia.
Fairbank, C. O., Estate.	Petrolia.	Bothwell.
Fairbank, J. H., Estate.	Petrolia.	Oil Springs.
Font, M.	Petrolia.	Moore.
Forsythe, A.	Copleston.	Enniskillen.
George, Wm.	Oil Springs.	Oil Springs.
Gillespie, Wm.	Petrolia.	Enniskillen.
Goudie, John.	Petrolia.	Enniskillen.
Hamlin, F. G.	Petrolia.	Enniskillen.
Hastie, Wm.	Sarnia.	Enniskillen.
Hillis, James T. & Sons.	Oil Springs.	Oil Springs.
Houston, King, Estate of.	Petrolia.	Enniskillen.
Howlett, Fred.	Petrolia.	Enniskillen.
James, Mrs. Mary A.	Oil Springs.	Oil Springs.
Jewell, Dan.	Oil Springs.	Oil Springs.
Kelly, J. E.	Petrolia.	Petrolia.
Kerr, John, Estate.	Petrolia.	Enniskillen.
Kerr, Mrs. Ross.	Sarnia.	Enniskillen.
Kettle, Robert.	Petrolia.	Enniskillen.
Kirk, Elmer.	Petrolia.	Moore.
Levine, Herbert.	Petrolia.	Enniskillen.
Lewis, John J., Estate.	Oil Springs.	Oil Springs.
Lidster, Geo. H.	Wallacetown.	Dutton.
Loxton, Thos.	Petrolia.	Enniskillen.
McDonald, F. D.	Petrolia.	Enniskillen.
McDougall, D.	Petrolia.	Enniskillen.
McFarlane, W.	Petrolia.	Enniskillen.
McGaffey, Richard.	Bothwell.	Bothwell.
McGillivray Geo. A.	201 Mt. Pleasant Ave., London.	Oil Springs.
McIntyre, D.	Petrolia.	Bothwell.
McLean, L.	Newbury.	Mosa.
McManus, Alex.	Wyoming.	Plympton.
McNaughton, J. D.	Glencoe.	Mosa.
McRiche, C. & A.	Bothwell.	Bothwell.
Metcalfe, J. N.	Petrolia.	Enniskillen.
Miller, F. J.	Sarnia.	Sarnia.
Miller, W. W.	Petrolia.	Moore.
Mills, A. J.	Corunna.	Sarnia.
Mitchell, Wesley.	Sarnia.	Oil Springs.
Morningstar, L. H.	Oil Springs.	Oil Springs.
Morningstar and Jackson.	Oil Springs.	Oil Springs.
Morris, Geo.	Petrolia.	Petrolia.
Mott and Mitchell.	Oil Springs.	Oil Springs.
Mott, E.	Oil Springs.	Oil Springs.
Mott, Fred.	Oil Springs.	Oil Springs.
Mutual Oil Producing Co.	London.	Petrolia.
Onondaga Oil and Gas Co.	Brantford.	Onondaga.
Ontario Lands and Oil Co., Ltd.	Petrolia.	Enniskillen.
Osborne Oil Producers.	Petrolia.	Moore.
Parks, Mrs. E. M.	Petrolia.	Enniskillen.
Petrol Oil and Gas Co.	301 York Bldg., Toronto.	Dover West.
Portsmouth, T.	Petrolia.	Enniskillen.
Rainsberry, Walter.	Petrolia.	Enniskillen.
Rawson, A.	Petrolia.	Enniskillen.
Schumacher, Bowen W.	112 W. Adams St., Chicago, Ill., U.S.A.	Enniskillen.
Smith, T. E.	Sarnia.	Sarnia.
Sproule Bros.	Oil Springs.	Oil Springs.
Stonehouse Bros.	Petrolia.	Moore.
Tuer, J. T.	Wyoming.	Plympton.
Union Natural Gas Co. of Canada, Ltd.	483 Market Sq., Chatham.	Dover West.
Walker Oil and Gas Co., Ltd., of Bothwell.	Windsor.	Bothwell.
Wallen, Alex. C.	Oil Springs.	Oil Springs.
Wallen, John, Estate.	Oil Springs.	Oil Springs.
Wallen & Wallen, Estate.	Oil Springs.	Oil Springs.
Warwick, Joseph.	Oil Springs.	Oil Springs.
Wat, P. J.	London.	Petrolia.
Willett, G. E.	Bothwell.	Bothwell.
Winnett, J. W. G.	Bothwell.	Bothwell.
Woodward, John.	Oil Springs.	Oil Springs.
Woodward, Wm.	Oil Springs.	Oil Springs.
Yerks, Carlton.	Petrolia.	Petrolia.
Young, W. E.	Wyoming.	Plympton.
<b>SASKATCHEWAN—</b>		
<i>Drilling—</i>		
Riverhurst Oil and Gas Co., Ltd.	Riverhurst.	Riverhurst.
Simpson Oil Co., Ltd.	Simpson.	Simpson.
Unity Valley Oil Co., Ltd.	207 Lancaster Bldg., Calgary.	Unity Valley.

## Petroleum Industry—Concluded

Name	Address	Location
<b>ALBERTA—</b>		<i>Field</i>
<i>Producing—</i>		
British Petroleum, Ltd.....	36 Dominion Bank Chambers, Ed- monton.....	Wainwright.
Canada Southern Oil and Refining Co., Ltd....	Black Diamond.....	Turner Valley.
Edmonton-Wainwright Oils, Ltd.....	Wainwright.....	Wainwright.
McLeod Oil Co., Ltd.....	Grain Exchange Bldg., Calgary.....	Turner Valley.
Royalite Oil Co., Ltd.....	239-6th Ave. W., Calgary.....	Turner Valley.
Vulcan Oils, Ltd.....	Vulcan.....	Turner Valley.
<i>Drilling—</i>		
Advance Oil Co., Ltd.....	Calgary.....	Ribstone.
Big Chief Oil Co.....	Black Diamond.....	Turner Valley.
Black Rock Petroleum, Ltd.....	322 Burns Bldg., Calgary.....	Fort Vermilion.
British Dominion Oil and Development Corp., Ltd.....	211-212 Dominion Bank Bldg., Cal- gary.....	Turner Valley.
Coalmont Oils, Ltd.....	400 Lancaster Bldg., Calgary.....	Turner Valley.
Cherokee Oil and Refining Co., Ltd.....	Calgary.....	Moose Mountain.
Coats Syndicate.....	Didsbury.....	Olds.
Cooper-Nanton Oil Co., Ltd.....	Thomson Block, Calgary.....	Turner Valley.
Dalhousie Oil Co., Ltd.....	402 Lancaster Bldg., Calgary.....	Turner Valley.
Dallas Oil Co.....	410 Lougheed Bldg., Calgary.....	Turner Valley.
Devenish Petroleum, Ltd.....	Leeson-Lineham Block, Calgary.....	Skiff.
Dolomite Oils, Ltd.....	Canada Life Bldg., Calgary.....	Turner Valley.
Dutch America Oils, Ltd.....	303 Maclean Block, Calgary.....	Turner Valley.
Emerald Oils, Ltd.....	10119-.00A St., Edmonton.....	Wainwright.
Fuego Oil Co., Ltd.....	Oyen.....	Fuego.
Highland Oil Co., Ltd.....	908 Lancaster Bldg., Calgary.....	Turner Valley.
Home Oil Co., Ltd.....	Canada Life Bldg., Calgary.....	Turner Valley.
Interior Oil Co., Ltd.....	Wainwright.....	Wainwright.
Mewasin Oils, Ltd.....	Molsons Bank Bldg., Edmonton.....	Wainwright.
New Black Diamond Oil Co., Ltd.....	127-8th Ave. E., Calgary.....	Turner Valley.
New McDougall-Segur Oil Co., Ltd.....	38 Union Bank Bldg., Calgary.....	Turner Valley.
New Valley Oil Co., Ltd.....	Calgary.....	Turner Valley.
Okalta Oils, Ltd.....	1015 Herald Bldg., Calgary.....	Turner Valley.
Ranchmen's Gas and Oil Co., Ltd.....	509 Grain Exchange Bldg., Calgary.....	High River.
Ribstone Oils, Ltd.....	65 Canada Life Bldg., Calgary.....	Ribstone.
Rosebud Oil Syndicate.....	Carstairs.....	Altario.
Seneca Oils, Ltd.....	507 Grain Exchange Bldg., Calgary.....	Turner Valley.
Signal Hill Oil Co., Ltd.....	313 Lancaster Bldg., Calgary.....	Moose Mountain.
Spooner Oils, Ltd.....	311 Lancaster Bldg., Calgary.....	Turner Valley.
Stockmen Oils, Ltd.....	315 Maclean Block, Calgary.....	Turner Valley.
Urban Oil Co., Ltd.....	Canada Life Bldg., Calgary.....	Sweetgrass.
Wabash Oils, Ltd.....	1238-19th Ave. W., Calgary.....	Morley.
Wainwright Dome Oil Co., Ltd.....	Wainwright.....	Wainwright.
Western Consolidated Oils, Ltd.....	Molsons Bank Bldg., Edmonton.....	Wainwright.

## OTHER NON-METAL MINING INDUSTRIES

## Actinolite Mining Industry

<b>ONTARIO—</b>		<i>Township</i>
Actinolite Mining Co., Ltd.....	Bloomfield, N.J.....	Kaladar.

## Asbestos Mining Industry

<b>QUEBEC—</b>		<i>Mine Township</i>
Asbestos Corporation, Ltd.....	Canada Cement Bldg., Montreal....	King—Thetford. Beaver—Coleraine. Boston—Broughton. British Canadian—Coleraine. Consolidated—Thetford. Maple Leaf—Coleraine. Vimy Ridge—Ireland. Greenshield—Coleraine. Jeffrey—Shipton. Johnson's—Thetford. Johnson's—Coleraine. Bell—Thetford. Thetford. Quebec—Broughton.
Canada Asbestos and Chrome Co.....	Black Lake.....	
Canadian Johns-Manville Co., Ltd.....	450 St. James St., Montreal.....	
Johnson's Company.....	Thetford Mines.....	
Keasbey and Mattison Co.....	Ambler, Penn., U.S.A.....	
Northern Asbestos Co., Ltd.....	Thetford Mines.....	
Quebec Asbestos Corporation, Ltd.....	East Broughton.....	
<b>ONTARIO—</b>		
Porcupine Asbestos Corporation.....	Timmins.....	Bowman—Deloro.

## Barytes Mining Industry

Name	Address	Location
Nova Scotia— Brandram-Henderson, Ltd.....	Montreal, P.Q.....	East Lake Ainslie, Inverness County.

## Feldspar Mining Industry

MINES—		Township
QUEBEC—		
Bon Ami, Ltd.....	Manchester, Conn., U.S.A.....	Aylwin.
Buckingham Mining Co., Ltd.....	658 Dorchester St., Montreal.....	Buckingham.
Cameron, Wm. & J. J.....	Box 11, Buckingham.....	Buckingham.
Cowan, Wm.....	Buckingham.....	Buckingham.
Lapointe, E.....	N.D. de la Salette.....	Portland W.
O'Brien and Fowler.....	Bank of Nova Scotia Bldg., Ottawa, Ont.....	Derry.
Parcher, A.....	Glen Almond.....	Derry.
Pedneaud, G.....	Buckingham.....	Buckingham.
Winning, Bush.....	N.D. de la Salette.....	Portland.
ONTARIO—		
Anderson, J. G.....	Lucknow.....	Dryden and Head.
Bathurst Feldspar Mines, Ltd.....	King St. E., Toronto.....	Bathurst.
Consolidated Feldspar Mines.....	29 Melinda St., Toronto.....	Ratter.
Craig, T. H.....	Verona.....	Loughborough.
Elizabeth Feldspar Mines, Ltd.....	24 Rose Ave., Toronto.....	Dill.
Feldspar's, Ltd.....	293 Bay St., Toronto.....	Bedford, Portland and Loughborough.
Genesee Feldspar Co.....	Rochester, N.Y., U.S.A.....	Monteagle.
Gilpin Corporation.....	Brunswick, Maine, U.S.A.....	
Hasselbring & Myhill.....	612 Queen St., Sault Ste. Marie.....	Storrington.
Hurlburt, G. W.....	304 C.P.R. Bldg., Toronto.....	Storrington.
Industrial Minerals Corporation.....	805 Bank of Hamilton Bldg., Toronto.....	Monmouth.
Northern Feldspar Mines, Ltd.....	Sudbury.....	Dill.
O'Brien & Fowler.....	Bank of Nova Scotia Bldg., Ottawa.....	Mattawan.
Orser, S. H.....	Perth Road.....	Loughborough.
Perth Feldspar and Mining Co., Ltd.....	Perth.....	Bathurst.
Rock Products Co.....	Silica, Ohio, U.S.A.....	Bathurst.
Verona Quarries.....	Box 354, Hamilton.....	Loughborough.
Wanup Feldspar Mines, Ltd.....	Lucknow.....	Dill.
MILLS—		
ONTARIO—		
Frontenac Floor and Wall Tile Co., Ltd.....	Kingston.....	Plant at Kingston.
Industrial Minerals Corporation.....	805 Bank of Hamilton Bldg., Toronto.....	Plant at Toronto.

## Graphite Mining Industry

		Township
QUEBEC—		
Canadian Graphite Corporation.....	425 Phillips Place, Montreal.....	Boyer.
Crucible Graphite Co., Ltd.....	52 Spadina Ave., Toronto, Ont.....	Buckingham.
ONTARIO—		
Black Donald Graphite Co., Ltd.....	Calabogie.....	Brougham.

## Grinding Pebbles Industry

ONTARIO—		
Todesco, C. W.....	Jackfish.....	Near Jackfish.

## Grindstone Industry

NOVA SCOTIA—		
Mic-Mac Grindstone Co., Ltd.....	Woodburn.....	Woodburn.
Sutherland, Jas. W.....	Egerton.....	Quarry Id.
NEW BRUNSWICK—		
Miramichi Quarry Co., Ltd.....	Quarryville.....	Quarryville.
Read Stone Co., Ltd.....	Sackville.....	Stonehaven.
BRITISH COLUMBIA—		
MacDonald, J. A. and C. H.....	Vancouver.....	Newcastle Island.

## Gypsum Mining Industry

Name	Address	Location
<i>Township</i>		
NOVA SCOTIA—		
Atlantic Gypsum Products Co.....	40 Rector St., New York, U.S.A....	Walton, Hants Co.
Canadian Gypsum Co., Ltd.....	Windsor.....	Wentworth, Hants Co.
Higginson Manufacturing Co.....	Newburg, N.Y., U.S.A.....	Newport Station, Hants Co.
Ingonish Gypsum Co., Ltd.....	Canada Cement Bldg., Montreal, P.Q.....	Ingonish Beach, Victoria Co.
Iona Gypsum Products Ltd.....	Box 60, Sydney.....	Iona.
Newark Plaster Co.....	Ottawa Brook.....	Ottawa Brook, Victoria Co.
Nova Scotia Coal and Gypsum Co., Ltd.....	Windsor.....	Wentworth, Hants Co.
Windsor Plaster Co., Ltd.....	Windsor.....	Windsor, Hants Co.
NEW BRUNSWICK—		
Albert Manufacturing Co.....	Hillsborough.....	Hillsborough, Albert Co.
Stewart, J. E.....	Plaster Rock.....	Plaster Rock.
ONTARIO—		
Ontario Gypsum Co., Ltd.....	Paris.....	Caledonia, Seneca Tp; Lythmore, Oneida Tp.
MANITOBA—		
Manitoba Gypsum Co., Ltd.....	Box 3057, Winnipeg.....	Gypsumville.
BRITISH COLUMBIA—		
British Columbia Cement Co., Ltd.....	305 Belmont House, Victoria.....	Canford.
British Columbia Gypsum Co., Ltd.....	Box 59, New Westminster.....	Falkland.
Canada Cement Co., Ltd.....	Montreal, P.Q.....	Mayook.
Kelgro, Ltd.....	Lough Raymond.....	
Pollard Bros.....	Lough Raymond.....	

## Iron Oxide Mining Industry

QUEBEC—		
Argall, Thos. H.....	La Pointe du Lac.....	Point du Lac, St. Maurice Co.
Canada Paint Co., Ltd.....	572 William St., Montreal.....	Red Mill, Champlain Co.
Montmorency Paint Products Co., Ltd.....	83 Craig St. W., Montreal.....	Mommtmorency Co.
BRITISH COLUMBIA—		
Davidson, J. G.....	1641 Woodland Drive, Vancouver.....	Near Mons.
McDonald, R. W.....	823 Fifth Ave. West, Calgary, Alta.....	Windermere District.

## Magnesite Mining Industry

QUEBEC—		<i>Township</i>
International Magnesite Co., Ltd.....	Calumet.....	Hartington.
North American Magnesite Producers, Ltd.....	Magnesite.....	(Grenville.
Scottish Canadian Magnesite Co.....		(Grenville.

## Mica Mining Industry

QUEBEC—		<i>Township</i>
Blackburn Bros., Ltd.....	Union Bank Bldg., Ottawa, Ont.....	Templeton.
Chenier, Z. E.....	Rockland, Ont.....	Grenville.
Cross, W. C.....	Cascades.....	
de Rainville, Jos.....	St. Pierre de Wakefield.....	Wakefield.
Laurentide Mica Co., Ltd.....	East Pittsburg, Pa., U.S.A.....	Templeton.
McGlashan, R. J. & Co.....	Hull.....	Hull.
Martin, A. G.....	Ottawa, Ont.....	Hull.
Mineral Products Co., Ltd.....	330 Bay St., Toronto, Ont.....	Plant at Hull.
Wallingford, Geo. & Chas.....	Ottawa, Ont.....	Hull.
Wallingford Bros., Ltd.....	Perkins.....	Templeton.
Watts and Noble.....	217 Lyon St., Ottawa, Ont.....	Portland W.
ONTARIO—		
Bennett, H. V.....	Perth.....	South Elmsley.
Kent Bros. and Estate J. M. Stoness.....	Kingston.....	Bedford.
Lee, W. W.....	Bedford Mills.....	
Loughborough Mining Co., Ltd.....	Sydenham.....	Loughborough.
McNaughton, G. D.....	Sydenham.....	
Martin, A. G.....	231 Besserer St., Ottawa.....	South Burgess.
Trousdale, James.....	Sydenham.....	
Smith, D.....	Perth.....	
Wilson, Richard.....	Hartington.....	
Woods, F. J.....	Godfrey.....	

## Mineral Waters Industry

Name	Address	Location
<b>QUEBEC—</b>		
Abenakis Springs Co.....	Abenakis Springs.....	Abenakis Springs.
Roy, Cyprien.....	St. Germain.....	L'Islet Plate.
<b>ONTARIO—</b>		
Borthwick, W.....	10 Albert St., Ottawa.....	Gloucester Tp.
Caledonia Springs Co., Ltd.....	6380 St. Urbain St., Montreal, P.Q.....	(Caledonia Springs. Bourget. Bourget. Goderich. Caledonia. Pakenham Tp.
Deneault, F.....	Bourget.....	
Goderich Mineral Water Co.....	Goderich.....	
Gurd, Charles & Co., Ltd.....	1016 Bleury St., Montreal, P.Q.....	
Sanitaris, Ltd.....	Arnprior.....	

## Phosphates Mining Industry

<b>QUEBEC—</b>		
Wallingford Bros., Ltd.....	Perkins.....	Perkins Mills.

## Pyrites Mining Industry

<b>QUEBEC—</b>		
Eustis Mining Co.....	Eustis.....	Ascot Tp.
<b>ONTARIO—</b>		
Graselli Chemical Co., Ltd.....	Hamilton.....	Blythefield Tp.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining and Smelting Co. of Canada, Ltd.....	Trail.....	"Sullivan Mine", Kimberley.
Granby Consolidated Mining, Smelting and Power Co., Ltd.....	Vancouver.....	"Hidden Creek Mine", Anyox.

## Quartz Mining Industry

<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.....	Sydney.....	Leitches Creek.
River Dennis Sand and Clay Co., Ltd.....	River Dennis.....	Melford, Inverness Co.
<b>QUEBEC—</b>		
Buckingham Mining Co., Ltd.....	658 Dorchester St., Montreal.....	Buckingham Tp.
Cameron, J. J.....	Buckingham.....	Derry Tp.
Canada Glass Products, Ltd.....	Hull.....	East Templeton.
O'Brien & Fowler.....	c-o M. J. O'Brien Ltd., Ottawa, Ont.....	Derry Tp.
Pedneaud, G.....	Buckingham.....	Buckingham Tp.
Silico, Ltd.....	4 Hospital St., Montreal.....	Parish of St. Canut.
<b>ONTARIO—</b>		
Anderson, J. G.....	Wanup.....	
Dominion Mines and Quarries, Ltd.....	Canada Life Bldg., 46 King St. W., Toronto.....	District of Algoma (East Neebish Quarry and Killarney Quarry).
Industrial Minerals Corporation.....	Toronto.....	
Mond Nickel Co., Ltd.....	Coniston.....	Neelon Tp.
Orser, S. H.....	Perth Road.....	Verona.
Raynor, G. W.....	410 Lumsden Bldg., Toronto.....	Hybla.
Wright & Co.....	960 Queen St., Sault Ste. Marie.....	Deroche Tp.
<b>BRITISH COLUMBIA—</b>		
Consolidated Mining and Smelting Company of Canada, Ltd.....	Trail.....	Oliver.
Granby Consolidated Mining, Smelting and Power Co., Ltd.....	Anyox.....	Observatory Inlet.

Salt Industry

Name	Address	Location
NOVA SCOTIA— Malagash Salt Products, Ltd.....	New Glasgow.....	Malagash, Cumberland Co.
ONTARIO— Brunner-Mond, Canada, Ltd..... Canadian Salt Co., Ltd..... Dominion Salt Co., Ltd..... Elarton Salt Works Co., Ltd..... Exeter Salt Works Co., Ltd..... Goderich Salt Co., Ltd..... Kincardine Salt Co., Ltd..... Western Canada Flour Mills Co., Ltd..... Western Salt Co., Ltd.....	Amherstburg..... Sandwich..... Sarnia..... Watford..... Exeter..... Goderich..... Kincardine..... 295 Macpherson Ave., Toronto..... 411 Dominion Bank Bldg., Toronto..	Amherstburg, Essex Co. Windsor and Sandwich, Essex Co. Sarnia, Lambton Co. Warwick, Lambton Co. Exeter, Huron Co. Goderich, Huron Co. Kincardine..... Goderich, Huron Co. Courtright, Lambton Co.

Silica Brick Industry

NOVA SCOTIA— Dominion Iron and Steel Co., Ltd.....	Sydney.....	Sydney.
ONTARIO— Algoma Steel Corporation, Ltd.....	Sault Ste. Marie.....	Sault Ste. Marie.

Sodium Carbonate Mining Industry

BRITISH COLUMBIA— Austin, C. W..... Coulson, John A. and Son..... Fraser, R..... Janes, Mrs. O. O..... Lloyd-Campbell, Ltd.....	70 Mile House..... Burley..... 70 Mile House..... 70 Mile House..... 422 Standard Bank Bldg., Vancouver	White Elephant. Near 70 Mile House. Near 70 Mile House. Coulson Spur.
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Sodium Sulphate Mining Industry

SASKATCHEWAN— Bishopric and Lent Co.....	WintonPlace, Cincinnati, Ohio, U.S.A	Frederick Lake.
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Talc and Soapstone Mining Industry

QUEBEC— Houle, J..... Robertsonville Soapstone Quarry Co.....	St. Antoine de Pontbriand..... Robertsonville.....	Thetford Tp. Thetford Tp.
ONTARIO— Asbestos Pulp Co., Ltd..... Gillespie Co., Ltd., Geo. H. (Mill)..... Grace Mining Co..... Henderson Mines, Ltd.....	Madoc..... Madoc..... 15 Genesee St., Buffalo, N.Y..... Madoc.....	Huntingdon '1 p. Plant at Madoc. Vermilion Bay. Huntingdon Tp.

Volcanic Dust Industry

SASKATCHEWAN— Old Sol Manufacturing Co., Ltd.....	805 Erin St., Winnipeg.....	Waldeck.
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## CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS

## CLAY PRODUCTS INDUSTRY

## Brick and Tile

Name	Address	Location
<b>NOVA SCOTIA</b>		
Brooks, Geo.	New Glasgow	Plymouth.
Brooks, Stephen, and Sons.	Box 359, New Glasgow	New Glasgow.
Miller, Jas. B.	Elmsdale	Barney's Brook.
Nova Scotia Clay Works, Ltd.	Havelock St., Amherst	(Elmsdale.
		Pugwash.
Shaw, L. E., Ltd.	Avonport	Avonport.
<b>NEW BRUNSWICK—</b>		
Ryan, M., and Sons, Ltd.	Box 575, Fredericton	Woodstock Road, Fredericton.
Tondreau, Joseph	Bathurst	Bathurst.
<b>QUEBEC—</b>		
Ascot Tile and Brick Co., Ltd.	Ascot Corner	Ascot Corner.
Bell, W. and D.	1286 St. Valier St., Quebec	Little River Rd.
Bouchard, Benjamin	Jonquières	Jonquières
Citadel Brick, Ltd.	14 St. Joseph St., Quebec	Boischatel.
Granby Clay Products, Ltd.	P.O. Box 266, Granby	Granby Tp.
Gravel, Joseph	Acton Vale	Acton Vale.
Hodgins, David G.	Shawville	Shawville.
L'Industrielle de St. Tite, Ltd.	St. Tite	St. Tite.
Longpré, Emile	St. Félix de Valois	St. Félix de Valois.
Mathieu, Amédée	Victoriaville	Victoriaville.
McCrean-Walley Brick Co., Ltd.	Oliver Bldg., Sherbrooke	Lennoxville.
National Brick Co. of Laprairie, Ltd.	Canada Cement Co. Bldg., Montreal	(Delson.
Proulx Frères	P.O. Box 384, Richmond	Richmond.
St. Lawrence Brick Co., Ltd., The	71 St. James St., Montreal	Laprairie
Scott Brick Co., Ltd.	136 St. Peter St., Quebec	Scott Junction.
Suddard, E. P.	Gaspé	Douglas West Tp.
<b>ONTARIO—</b>		
Alvinston Brick and Tile Co., Ltd.	Box 26, Alvinston	Alvinston.
Baker, Geo. E.	Arnprior	Arnprior.
Bartonville Pressed Brick Co., Ltd.	620 Lister Block, Hamilton	Bartonville.
Batchelor, Samuel	Proton Station	Proton Station.
Bechtel Brick Co., Ltd., The	Waterloo	Waterloo.
Booth Brick and Lumber Co., The	Drawer 61, New Toronto	Etobicoke Tp.
Brampton Pressed Brick Co., Ltd.	Brampton	Brampton.
Broadwell, B. and Son	Kingsville	(Near) Kingsville.
Caledon Mountain Shale Products	600 Bay St., Toronto	Caledon.
Campbell, Neil F.	R.R. No. 1, West Lorne	West Lorne.
Canadian Fireclay Products, Ltd.	604 Adelaide St. E., Toronto	New Toronto.
Canadian Pressed Brick Co., Ltd.	195 Ottawa St., S., Hamilton	Hamilton.
Cheeseman, Peter	670 King St. W., Hamilton	Hamilton.
Cooksville Shale Brick Co., Ltd.	26 Queen St. E., Toronto	Cooksville.
Cooper, W. H.	312 Clyde Block, Hamilton	Hamilton.
Cornhill, James & Sons, Ltd.	Grand Ave. E., Chatham	Chatham.
Crang, Jethro	22 Thorne Crescent, Toronto	Toronto.
Curtin, Frank	R.R. No. 4, Lindsay	Lindsay.
Curtis Bros.	Box 809, Peterboro	Peterboro.
Dalton, Maurice	R.R. No. 3, Dresden	Dawn Tp.
De Laplante, J. E.	Dawes Rd., Coleman P.O., Toronto	Toronto.
Deller, Albert, and Son	Brownsville	Brownsville.
Deller Bros.	R.R. No. 2, Norwich	(Near) Norwich.
Dolan, John	R.R. No. 2, Watford	Warwick.
Doninion Sewer Pipe and Clay Industries, Ltd.	Swansea	Aldershot.
Donaldson, S. E.	R.R. 4, Harriston	Fulton Mills.
Don Valley Brick Works, Ltd.	114 Federal Bldg., Toronto	Todmorden.
Douglas and Douglas	Wilkesport	Wilkesport.
Dublin Brick and Tile Yard	Dublin	Dublin S.
Elliott, Charles	Bluevale	Bluevale.
Elliott, Wm.	Glenannan	Glenannan.
Elliott, James, Jr.	519 Wellington St. W., Sault Ste. Marie	E. Korah Tp.
Fort William Brick Co.	500 Victoria Ave., Fort William	West Fort William.
Frid Bros.	Macklin St. and Dundas Road, Hamilton	Hamilton.
Gammage, C. R.	R.R. No. 2, Dresden	Dresden.
Gardiner, Wm.	Box 83, Blenheim	Blenheim.
Godfrey, Thomas & Co.	Carleton Place	Carleton Place.
Grimsby Brick and Tile Co.	Grimsby	Grimsby.
Hallatt, Herbert & Son	Box 93, Comber	Comber.
Hallatt, Wm.	Richards Bldg., Chatham	Merlin.
Halton Brick Co., Ltd.	28 Symes Rd., Toronto 9	Equesting Tp.
Hamilton Pressed Brick Co.	Kensington Ave. S., Hamilton	Hamilton.
Hill, A. W.	R.R. 1, Coatsworth	East Tilbury Tp.
Hill, Aaron	Essex	Essex.
Hircock Bros.	Box 83, Bowmanville	Bowmanville.

## Brick and Tile—Continued

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Hitch, D. A.	Erie St. N., Ridgerton	Ridgerton.
Hitch, Thos.	Box 254, St. Thomas.	St. Thomas.
Hodder, Mrs. J. H. and Sons.	Dutton	Dutton.
Hohl, John	R.R. No. 1, Wellesley	Lisbon.
Houston Co., Ltd., The	Tweed	Tweed.
Howlett, Fred and Sons	Box 3, Petrolia	Petrolia.
Huntsville Brick and Tile Works	Huntsville	Huntsville.
Interprovincial Brick Co., Ltd.	30 Toronto St., Toronto	(Cheltenham, Milton).
Jackson, W. B.	290 Rawdon St., Brantford.	Brantford.
Janes, T. A.	R.R. No. 1, Mt. Brydges	Mt. Brydges.
Jamieson Lime Co.	Renfrew	Renfrew.
Jasperson, B. Brick and Tile Yards.	Kingsville	Kingsville.
Jervis, W. J.	R.R. No. 3, Dorchester Station	Dorchester Station.
Johnson, James	R.R. No. 3, Pembroke	Pembroke.
Kerr, Chas.	Goderich	Ben Miller.
Koebel, Bros.	Box 54, St. Clements	St. Clements.
Kruse Bros.	Seaforth	Tuckersmith Tp.
Labey, Geo. A. and Son	Foxboro	Foxboro.
Lindsay, Earl	R. R. No. 2, Wallaceburg	Wallaceburg.
Martin, Thos. E.	Thamesville	Thamesville.
McComb, Chester	Denfield	Elginfield.
McCormick Bros.	R.R. No. 5, Watford	Kingscourt Junction.
McEachran, N.	Highgate	Highgate.
Mclvor Bros.	Buchanan St., Cobourg	Cobourg.
McMahon, Robert	R.R. No. 2, Kerwood	Strathroy.
Merkley's, Ltd	Billings Bridge	Billings Bridge.
Middleton, C.	Wyoming	Wyoming.
Milton Brick, Ltd.	Milton	(Milton, Streetsville, Kingsville.
Miner, Manly F.	Kingsville	Kingsville.
Missouri Tile Yard (W. H. Deller)	R.R. No. 4, Thorndale	Thorndale.
Moscow Brick and Tile Works	R.R. No. 1, Greenock	Riverdale.
Napanee Brick and Tile Works	R.R. No. 3, Napanee	Napanee.
O'Dell, Wm. and Sons	R.R. No. 1, Ingersoll	Ingersoll.
Oilman Bros.	111 Macklin St., Hamilton	Hamilton.
Ontario Denison Tile Co., Ltd.	24 Wyandotte St. E., Windsor	(Tilbury, Fletcher, Hog's Back.
O'Reilly, T. E.	320 Bay St., Ottawa	Hog's Back.
Ottawa Brick Mfg. Co., Ltd., The	53 Queen St., Ottawa	Kitchener.
Ott Brick and Tile Mfg. Co., Ltd., The	33 King St. E., Kitchener	Owen Sound.
Owen Sound Brick Co., Ltd., The	859-2nd Ave E., Owen Sound	Dresden.
Parks Henry W.	R.R. No. 2, Dresden	St. Catharines.
Paxton, Fred R.	230 Queenston St., St. Catharines	Pembroke.
Pembroke Brick Co., The	Pembroke	St. Helens.
Phillips, Thomas & Son	R.R. No. 2, Lucknow	London.
Phinn Bros.	238 Briscoe St., London	Toronto.
Phippen & Field	150 Dawes Rd., Toronto	Mount Dennis.
Piggott, Geo. & Co.	72 Guestville Ave., Toronto 9	Port Rowan.
Port Rowan Brick and Tile Co.	Port Rowan	Humber Bay.
Price and Cumming	Salisbury Ave., Humber Bay	Toronto.
Price and Smith	458 Greenwood Ave., Toronto	Mimico.
Provincial Brick Plant	Parliament Bldg., Toronto	Stratford.
Red Star Brick and Tile Yard (W. H. Barnhardt)	Stratford	Kerrwood.
Richardson, Jas. & Son	Kerrwood	Hamilton.
Riselay Brick Co., Ltd.	Main St. W., Hamilton	Toronto.
Russell, Jos., Estate	40 Blake St., Toronto	Dutton.
Smith, Alex. & Son	R.R. No. 2, Dutton	Thorah Tp.
Snelgrove, A.	Beaverton	Tuckersmith Tp.
Sproat, Wm. M.	R.R. No. 4, Seaforth	Toronto.
Standard Brick Co., Ltd., The	363 Broadview Ave., Toronto	Staples.
Staples Brick and Tile Co.	Staples	Vankleek Hill.
Steele, Edwin	Vankleek Hill	Stratford.
Stratford Brick, Tile and Lumber Co.	Mansion House, Stratford	Streetsville.
Streetsville Brick Co., Ltd., The	410 Crown Office Bldg., Toronto 2	Conestogo.
Stroh, M. C.	Conestogo	Todmorden.
Sun Brick Co., Ltd.	1104 Bay St., Toronto	Paipoonse Tp.
Superior Brick and Tile Co., Ltd.	426 Victoria Ave., Fort William	Parkhill.
Sutherland, W. A.	Box 293, Parkhill	Hamilton.
Tope, Richard, Estate	171 Queen St. S., Hamilton	(Milton, Toronto.
Toronto Brick Co., Ltd.	60 Victoria St., Toronto	Ruscom.
Voakes, D. and Son	Ruscom	Lindsay.
Wagstaff, Charles	R.R. No. 4, Lindsay	Toronto.
Wagstaff, A. H. & Co.	348 Greenwood Ave., Toronto	North Bay.
Wallace, R. & Son	66 First Ave. E., North Bay	Crediton.
Wein, Aaron	Crediton	Paisley.
Winch Bros.	Paisley	Near Kingsville.
Windsor Brick and Tile Co.	203 Exchange Bldg., Windsor	Woodslee.
Woodslee Brick and Tile Yards	Woodslee	Comber.
Wright, Geo. & Sons	Comber	

## Brick and Tile—Concluded

Name	Address	Location
<b>MANITOBA—</b>		
Alsip Brick Tile and Lumber Co., Ltd.....	200 Tribune Bldg., Winnipeg.....	Winnipeg.
Marion, Joseph A.....	Box 30, St. Boniface.....	St. Boniface.
Sidney Brick and Clay Works, Ltd.....	Sidney.....	Sidney.
Snyder, A. & Co., Ltd.....	Box 1401, Portage la Prairie.....	Portage la Prairie.
Snyder, M.....	Gilbert Plains.....	Gilbert Plains.
Wardrop & Sons.....	Whittemouth.....	Whittemouth.
<b>SASKATCHEWAN—</b>		
Bruno Clay Works, Ltd.....	Bruno.....	Near Bruno.
Dominion Fire Brick and Clay Products, Ltd., The.....	421 Hammond Bldg., Moose Jaw.....	Claybank.
Elliott, W. H. & Son.....	1320-3rd Ave. N., Saskatoon.....	Saskatoon.
Excelsior Brick Co., Ltd., The.....	Prince Albert.....	Prince Albert.
International Clay Products, Ltd.....	Estevan.....	Estevan.
Saskatchewan Penitentiary.....	Prince Albert.....	Prince Albert.
Shand Coal and Brick Co.....	Shand.....	Shand.
<b>ALBERTA—</b>		
Acme Brick Co., Ltd., The.....	125 Alberta Block, Edmonton.....	Cannell.
Benson, Ole.....	Grande Prairie.....	Grande Prairie.
Crandell, E. H., Pressed Brick and Sandstone Co.....	607 Maclean Block, Calgary.....	Brickburn.
Little, J. B. & Sons.....	9102-100th Ave., Edmonton.....	Riverdale.
Redcliff Brick and Coal Co., Ltd.....	Box B 5, Redcliff.....	Redcliff.
Redcliff Pressed Brick Co., Ltd.....	Box 87, Redcliff.....	Redcliff.
Redcliff Premier Brick Co., Ltd.....	Box C 2, Redcliff.....	Redcliff.
<b>BRITISH COLUMBIA—</b>		
Armstrong Brick Works (C. & A. Oakland).....	Armstrong.....	Armstrong.
Christian Community of Universal Brotherhood, Ltd., The.....	Grand Forks.....	Grand Forks.
Clayburn Co., Ltd.....	302 Credit Foncier Bldg., Vancouver.....	{Clayburn. Kilgard.
Gabriola Shale Products, Ltd.....	102 Moody Block, Victoria.....	Gabriola Is.
Gorse, Percy A.....	Salmon Arm.....	Enderby Is.
Haug, Wm. & Son.....	Kelowna.....	Kelowna.
Johnston & Co., Ltd.....	Kamloops.....	Near Kamloops.
North Saanich Brick and Tile Works.....	Sidney.....	Sidney.
Port Haney Brick Co., Ltd., The.....	846 Howe St., Vancouver.....	Port Haney.
Victoria Brick Co., Ltd.....	3001 Douglas St., Victoria.....	Victoria.

## Clay Sewer Pipe

<b>NOVA SCOTIA—</b>		
Standard Clay Products, Ltd.....	New Glasgow.....	New Glasgow.
<b>QUEBEC—</b>		
Standard Clay Products, Ltd.....	St. John's.....	St. John's.
<b>ONTARIO—</b>		
Dominion Sewer Pipe and Clay Industries, Ltd.....	Swansea.....	Swansea.
Hamilton and Toronto Sewer Pipe Co., Ltd., The.....	Wentworth St. N., Hamilton.....	Hamilton.
Ontario Sewer Pipe and Clay Products, Ltd.....	Mimico.....	Mimico.
<b>ALBERTA—</b>		
Alberta Clay Products Co., Ltd.....	Box 672, Medicine Hat.....	Medicine Hat.
<b>BRITISH COLUMBIA—</b>		
Clayburn Co., Ltd.....	302 Credit Foncier Bldg., Vancouver.....	Kilgard.

## Fire Brick, Fire Clay and Fire Clay Products

<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.....	Sydney.....	{Shubenacadie. Sydney.
Intercolonial Sales Co., Ltd.....	Westville.....	Westville.
<b>NEW BRUNSWICK—</b>		
Foley Pottery, Ltd.....	Saint John.....	Saint John.
<b>QUEBEC—</b>		
*Canada Firebrick Co., Ltd.....	371 Aqueduct St., Montreal.....	Montreal.
Montreal Terra Cotta Co., Ltd.....	511 St. Catharines St. W., Montreal.....	Lakeside.
*Standard Clay Products, Ltd.....	P.O. Box 819, St. John's.....	St. John's.
<b>ONTARIO—</b>		
*Bailey, Geo. & Co.....	331 Bay St., Toronto.....	Toronto.
National Fire Proofing Co. of Canada, Ltd.....	601 Dominion Bank Bldg., Toronto.....	Aldershot.

\* Produce clay products from imported clays.

## Fire Brick, Fire Clay and Fire Clay Products—Concluded

Name	Address	Location
<b>SASKATCHEWAN—</b> Dominion Fire Brick and Clay Products, Ltd....	421 Hammond Bldg., Moose Jaw....	Claybank.
<b>ALBERTA—</b> Alberta Clay Products, Ltd.....	Box 672, Medicine Hat.....	Medicine Hat.
<b>BRITISH COLUMBIA—</b> B.C. Refractories, Ltd..... Clayburn Co., Ltd.....	365 Water St., Vancouver..... 302 Credit Foncier Bldg., Vancouver.	Vancouver. Clayburn.

## Stoneware and Pottery

<b>NEW BRUNSWICK—</b> Foley Pottery, Ltd.....	Saint John.....	Saint John.
<b>QUEBEC—</b> *Canadian Potteries, Ltd..... *Canada Stoneware Works..... *Dominion Sanitary Pottery Co., Ltd.....	2 Longeul St., St. John's..... Iberville..... 189 St. James St., St. John's.	St. John's. Iberville. St. John's.
<b>ONTARIO—</b> *Campbell's, R. Sons..... *Canadian General Electric Co..... *Canadian Porcelain Co., Ltd..... Davis, John, and Sons..... *Dominion Insulator and Manufacturing Co., Ltd. Foster Pottery Co..... *Frontenac Floor and Wall Tile Co., Ltd..... *Smith Potteries.....  *Smith & Stone.....	100 Locke St. S., Hamilton..... 212 King St. W., Toronto..... Paradise Road, Hamilton..... 60 Heath St. W., Toronto..... Niagara Falls..... Main St. W., Hamilton..... Box 178, Kingston..... King St. W. and Alexander Blvd., Oshawa..... Georgetown.....	Hamilton. Peterborough. Hamilton. Toronto. Niagara Falls. Hamilton. Kingston. Hamilton. Oshawa. Georgetown.
<b>ALBERTA—</b> Medalta Potteries, Ltd.....	Medicine Hat.....	Medicine Hat.

## Other Structural Materials.

## Cement Industry

<b>QUEBEC—</b> Canada Cement Co., Ltd..... La Cie de Ciment Unic, Ltd..... National Cement Co.....	Canada Cement Co. Bldg., Montreal 294 St. Catherine St. E., Montreal.. 90 St. James St., Montreal	/Hull. Montreal East. St. François de Sales. Montreal East.
<b>ONTARIO—</b> Canada Cement Co., Ltd..... St. Mary's Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal P.Q. 49 Wellington St. E., Toronto.....	/Belleville. Port Colborne. St. Mary's.
<b>MANITOBA—</b> Canada Cement Co., Ltd..... Commercial Cement Co., Ltd.....	Canada Cement Co. Bldg., Montreal, P.Q. 1002 McArthur Bldg., Winnipeg.....	Fort Whyte. Babcock.
<b>ALBERTA—</b> Canada Cement Co., Ltd..... Marlboro Cement Co.....	Canada Cement Co. Bldg., Montreal, P.Q. 12128-105th Ave., Edmonton.....	Exshaw. Marlboro.
<b>BRITISH COLUMBIA—</b> British Columbia Cement Co., Ltd.....	305 Belmont House, Victoria.....	Bamberton.

\* Produce clay products from imported clays.

## Lime Industry

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.	Sydney	Sydney
Eastern Lime Co. (H. C. Burchell)	Windsor	Windsor.
<b>NEW BRUNSWICK—</b>		
Bathurst Co., Ltd.	Bathurst	Bathurst.
Peters, C. H. & Sons, Ltd.	Ward St., St. John	Torreyburn.
Provincial Lime Co., Ltd.	89 Water St., St. John	Lawlor's Lake.
Purdy and Green	323 Main St., St. John	St. John.
Randolph and Baker, Ltd.	Randolph	Randolph.
Stetson, Cutler & Co., Ltd.	Campbellton	St. John.
<b>QUÉBEC—</b>		
Arnaud & Beaudry	Joliette	Joliette.
Baron, A. et Frère	St. Dominique de Bagot	St. Dominique de Bagot.
Boivin, Arthur	Pont Rouge	Pont Rouge.
Dominion Lime Co., The	East Angus	Lime Ridge.
Ducharme, C.	Guigues	Guigues.
Fortin, Octave	Val Brillant	Val Brillant.
Heon, Octave	St. Louis de Champlain	St. Louis de Champlain.
Lalumière, Joseph	St. Dominique de Bagot	St. Dominique de Bagot.
Laurentian Stone Co., Ltd.	250 Catherine St., Ottaw, Ont.	Hull.
Limoges, Fils et Cie	552 rue Poupart, Montreal	Montreal.
Naud, Francis	St. Marc des Carrieres	St. Marc des Carrieres.
St. Marc Lime Co.	St. Marc des Carrieres	St. Marc des Carrieres.
Standard Lime Co.	Joliette	(St. Marc des Carrieres.
		(St. Paul de Joliette.
Stinson-Reeb Builders' Supply Co., Ltd.	230 Dorchester St. W., Montreal	Montreal.
<b>ONTARIO—</b>		
Alasbastine Co., Paris, Ltd., The	Paris	(Elora.
American Cyanamid Co.	511-5th Ave., New York City, N. Y.	(Teeswater.
Beachville White Lime Co., Ltd.	Beachville	Niagara Falls.
Biederman, Albert G.	Golden Lake	Beachville.
Brunner-Mond (Canada), Ltd.	Amherstburg	Golden Lake.
Cameron, W. M.	Carleton Place	Anderdon Township.
Canada Lime Co., Ltd.	26 Queen St. E., Toronto	Carleton Place.
Chalmers Lime Works	689 Seventh St. W., Owen Sound	Coboconk.
		Owen Sound.
Christie, Henderson & Co., Ltd.	201 Crown Office Bldg., Toronto 2	(Hespeler.
		Kelso.
Dominion Sugar Co., Ltd.	Chatham	Puslinch.
		(Chatham.
Gallagher Lime and Stone Co., Ltd.	James St., Hamilton	(Wallaceburg.
Harvey, E., Ltd.	15 Douglas St., Guelph	Hamilton.
Jamieson, J. M.	Foresters Falls	Rockwood.
Jamieson Lime Co.	Hall St., Renfrew	Foresters Falls.
Kinkley, H.	Napance	Renfrew.
Marshall, James	Hamilton	Napance.
Robertson, D., Co., Ltd.	26 Queen St East, Toronto	Hamilton.
Standard Chemical Co., Ltd.	200 Bay St., Toronto	Milton.
Standard White Lime Co., Ltd.	15 Douglas St., Guelph	Eganville.
		(Beachville.
Toronto Brick Co., Ltd.	60 Victoria St., Toront	(Guelph.
Toronto Lime Co., Ltd.	26 Queen St. E., Toronto	Coboconk.
Vogan, Samuel	Gould St., Wiarton	Limehouse.
Weppler, Henry	R.R. No. 2, Priceville	Warton.
		Glenelg Tp..
<b>MANITOBA—</b>		
Gillis, Quarries Ltd.	Spruce and Richard Sts., Winnipeg	(Garson.
Manitoba Gypsum Co., Ltd.	Box 3057, Winnipeg	Gypsumville.
Moosehorn Lime Co., Ltd., The	214 Avenue Bldg., Winnipeg	Moosehorn.
Winnipeg Supply and Fuel Co., Ltd.	214 Avenue Bldg., Winnipeg	Stonewall.
<b>ALBERTA—</b>		
Loder's Lime Co., Ltd.	Kananaskis	Kananaskis.
Summit Lime Works	Box 273, Lethbridge	1½ miles east of Crow's Nest.
<b>BRITISH COLUMBIA—</b>		
Hedley Gold Mining Co., Ltd.	Hedley	Hedley.
Pacific Lime Co., Ltd.	602 Pacific Bldg., Vancouver	Blubber Bay, Texada Island.
Rosebank Lime Co.	602 Pacific Bldg., Vancouver	Esquimalt Harbour.

## Sand and Gravel

Name	Address	Location
<b>NOVA SCOTIA—</b>		
Pictou County Contractors' Supply Co., Ltd.	Provost St., New Glasgow	Lawrencetown.
Routledge, W. F.	Reserve Mines, Cape Breton	Reserve Mines.
<b>QUEBEC—</b>		
Aluminium Co. of Canada, Ltd.	Arvida	Simard Tp.
Blais, Jos., Engr.	8 Mont-Marie Ave., Levis	St. Romuald.
Bonner Sand and Ballast Ltd.	110 Bridge St., Montreal	South Durham.
Brault, F. X.	St. Dominique de Bagot	St. Dominique.
Brault, Wm.	16-1st Ave., Sherbrooke	Orford Tp.
Brouillet Sand Co.	Bawdon	St. Julienne.
Canadian Gravel Co.	Shawinigan Falls	St. Maurice River.
Canadian Import Co.	83 Dalhousie St., Quebec	St. Charles River.
Canadian International Paper Co.	Three Rivers	Hull Tp.
Chamberland, Edouard	St. Pierre de Charlesbourg	St. Pierre de Charlesbourg.
Cloutier, J. E.	Cartier St. Chicoutimi	Chicoutimi.
Consolidated Sand Co., Ltd.	270 Ottawa St., Montreal	St. Maurice River and Lake of Two Mountains.
Dubuc, J. E. A.	Chicoutimi.	Laterriere Tp.
Horne Copper Corporation	Noranda	Rouyn.
Independent Sand Co., Ltd.	4740 Iberville St., Montreal	Montreal.
Levasseur, J. W.	South Durham	South Durham.
Marchesseault, H. & Co.	2507 Lafontaine St., Montreal	Montreal.
Montreal, City of	City Hall, Montreal	St. Felix du Cap Rouge.
Montreal Harbour Commission	Montreal	Montreal Harbour.
Oka Sand and Gravel Co., Ltd.	134 McCord St., Montreal	Lake of Two Mountains.
Quebec Development Co.	56 St. Peter St., Quebec	Alma and Malgine Islands.
Quebec Harbour Commission	Quebec	Wolfe's Cove and Charles River.
Raymond, Charles	120 St. James St., Montreal	St. Julienne.
Roads Department of Quebec	Parliament Bldgs., Quebec	
Sherbrooke, City of	City Hall, Sherbrooke	Orford Tp.
Sorel Sand Co.	82 Montcalm St., Sorel	Sorel.
Standard Sand, Ltd.	Jcliette	Ste. Emelie Jet. and L'Epiphanie
<b>ONTARIO—</b>		
Allen Bros.	60 Birchcliffe Ave., Toronto 13	York Co...
Armstrong Supply Co., Ltd.	1143 York St., Hamilton	Hamilton.
Benson and Patterson	Stamford	Stamford.
Bruce, County of	Box 201, Walkerton	Bruce Co.
Cadwell Dredging Co., Ltd.	Windsor	St. Clair River and Lake Erie.
Campbellford, Town of	Campbellford	Campbellford.
Carleton, County of	Court House, Ottawa	Carleton Co.
Carroll Bros.	490 Ellicott Square, Buffalo, N.Y., U.S.A.	Welland Co.
Chatham Sand and Gravel Co.	Wellington St., Chatham	Thames River.
Conlin, Herbert L.	129 Front St. E., Toronto	Scarboro.
Dominion Concrete Co., Ltd.	Kemptville	near Kemptville.
Dominion Towing and Salvage Co., Ltd.	714 Whalen Bldg., Port Arthur	Lake Superior.
Dowler Bros.	Billings Bridge	Billings' Bridge.
Durham Stone and Sand Co., Ltd.	217 Bay St., Toronto	Durham.
Ellins, W.	Searlett Road, Toronto 9	York Co.
Empire Limestone Co.	19 Hudson St., Buffalo, N.Y., U.S.A.	Sherkston.
Essex Transit Co.	30 Sandwich St., Ford City	Near Sarnia.
Fineout, Geo. & Co.	Box 42, Port Arthur	Thunder Bay.
Foster, R. R.	278 Echo Drive, Ottawa	Near Ottawa.
Fuller Gravel, Ltd.	Ivanhoe	Fuller Station.
Godson Contracting Co., Ltd.	203 Richmond St. W., Toronto	Ontario Co.
Guelph, City of	Guelph	Guelph.
Harbour Brick Co., Ltd.	408 Lumsden Bldg., Toronto	Lake Ontario.
Harwich, Township of	Blenheim	Harwich Tp.
Hinde Bros.	134 Northlands Ave., Toronto	Toronto.
Homegardner Sand Co.	Sandusky, Ohio, U.S.A.	Lake Erie.
Huron, County of	Goderich	Huron Co.
Independent Concrete Pipe Co., Ltd.	Woodstock	Blandford and E. Zorra Tps.
Kent, County of	Chatham	Kent Co.
Kingston Sand and Gravel Co., Ltd.	183 William St., Kingston	Near Kingston.
Lake Erie Sand Co.	Sandusky, Ohio, U.S.A.	Lake Erie.
Lambton, County of	Sarnia	Lambton Co.
Lapish and Small	Sault Ste. Marie, Mich., U.S.A.	Lake Superior.
Leviness, J. E.	Stamford	Stamford.
Lovelace, E. J.	St. Catharines	Near St. Catharines.
Maple Sand, Gravel and Brick Co.	454 King St. W., Toronto	Vaughan Tp.
McArthur Engineering and Construction Co., Ltd.	15 Douglas St., Guelph	Guelph.
McLean, A. B., & Sons	123 Spring St., Sault Ste. Marie	Lake Superior.
Merlo, Merlo and Ray, Ltd.	Ford City	St. Claire River.
Middleton, County of	London	Middlesex Co.
Mohawk Sand and Gravel Co.	Box 336, Brantford	Brant Co.
Murray, J. J.	1382 Bridge St., Niagara Falls	Welland Co.
National Sand and Material Co., Ltd.	Welland	Lake Erie.
Ontario Department of Highways	Parliament Bldgs., Toronto	
Ontario Gravel Freighting Co., Ltd.	Box 189, Windsor	St. Claire River and Lake Erie.
Peterborough, City of	133 Simcoe St., Peterboro.	Peterboro.
Quigley, B. C.	General Delivery, Hamilton	Near Hamilton.
Ratcliffe, E. B., Ltd.	King St., Bartonville	Bartonville.

## Sand and Gravel—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Rogers, W. T.	510 Lumsden Bldg., Toronto	York Co.
Sand and Supplies, Ltd.	54 University Ave., Toronto	Waterloo Co.
Seebach, Ed.	R.R. No. 1, Sebringville	Perth Co.
Smythe, Con., Ltd.	Box 185, Station D., West Toronto	Etobicoke Tp.
Spratt, J. H.	Billings' Bridge	Billings' Bridge.
Stewart, R. T.	116 Cedar St., Sudbury	Sudbury.
Thomson, Geo.	191 Cassels St., North Bay	Widdifield Tp.
United Counties of Northumberland and Durham	Cobourg	Northumberland and Durham. Counties.
Wellington, County of	Box 258, Guelph	Wellington Co.
Wilcox, Hervey	985 Bridge St., Niagara Falls	Stamford Tp.
Windsor Sand and Gravel Co., Ltd.	Walkerville	Leamington.
Wright & Co.	960 Queen St., Sault Ste. Marie	Korah Tp.
<b>MANITOBA—</b>		
Braid and McCurdy	136 Portage Ave., Winnipeg	Bird's Hill.
Brandon, City of	City Hall, Brandon	Brandon.
Building Products and Coal Co., Ltd.	Christie St., Winnipeg	Woodlands.
Cusson Lumber Co., Ltd.	St. Boniface	Ste. Anne.
Greater Winnipeg Water District	Winnipeg	Mile 80, G.W.W.D. Ry.
North West Gravel and Coal Co.	Winnipeg	Bird's Hill.
Riley, W. J.	Molson	Molson.
<b>SASKATCHEWAN—</b>		
Mackenzie Supply Co., Ltd.	Box 107, Regina	Regina.
Weyburn Mental Hospital	Weyburn	Weyburn.
Yorkton, Town of	Yorkton	Yorkton.
<b>ALBERTA—</b>		
Cristall, L. and J.	10173-104th St., Edmonton	NW. 1-26-63-23 W. 4.
Diagnault, I.	Cardston	NE. 1-2-1-26 W. 4.
Dodds, J. A.	Olds	NW. 1-25-32-2 W. 5.
Huff Gravel Ltd.	10048-108th St., Edmonton	Heatherdown.
McLaughlin, J. W.	High River	E. 1-1-19-29 W. 4.
Parker, D.	Sweetgrass, Mont., U.S.A.	SE. 1-12-1-16 W. 4.
Saskatchewan Land and Homestead Co.	79 Clarence St., Kingston, Ont.	Sec. 21-39-27 W. 4.
Spoke, John C.	Perryvale	Perryvale.
Yule, Chas.	Carstairs	NW. 1-11-30-1 W. 5.
<b>BRITISH COLUMBIA—</b>		
Columbia Bitulithic, Ltd.	500 Beatty St., Vancouver	Chilliwack.
Deeks Gravel and Rock Co., Ltd.	712 Pacific Bldg., Vancouver	Porteau, Howe Sound and Sey- mour Creek.
Gilley Bros., Ltd.	902 Columbia St. W., New West- minster	Fraser River and Pitt Lake.
Hillside Sand and Gravel, Ltd.	1083 Main St., Vancouver	Howe Sound.
Producers' Sand and Gravel Co., Ltd.	1902 Store St., Victoria	Royal Bay.
Ross, G. W.	510 W., Hastings St., Vancouver	

## Stone Quarrying Industry—Granite

<b>NOVA SCOTIA—</b>		
Fairview Crushed Stone Co., Ltd.	1084 Barrington St., Halifax	Fairview.
Hoyt, C. M.	Middleton	Nictaux W.
Queensport Granite Co., Ltd.	Queensport	Queensport.
Rice, Elmer	Lawrencetown	Nictaux W.
Rice, W. D.	Middleton	Nictaux W.
<b>NEW BRUNSWICK—</b>		
Connolly, J. E. and O. P.	Bathurst	Gloucester Co.
Granite Street Pavement and Construction Co., Ltd.	Evandale	Hampstead.
McGrattan, H. and Sons, Ltd.	St. George	St. George.
Meating, Epps, Company, Ltd.	St. George	St. George and Bayside.
Milne, Coutts & Co., Ltd.	St. George	St. George.
Mooney, B. & Sons, Ltd.	112 Queen St., Saint John	Queens Co.
O'Brien and Baldwin	St. George	Spoon Island. St. George.
<b>QUEBEC—</b>		
B. and R. Granite Quarry	Beebe	Stanstead Tp.
Bergeron, Joseph	Shawinigan Falls	Almaville.
Bergeron, P.	Chicoutimi West	Rang St. Ignace.
Bernier, Aug.	Roberval	Roberval.
Brodie's Limited	1070 Bleury St., Montreal	Guenette. Mt. Johnson.
Brunet, Joseph	663 Cote des Neiges Rd., Montreal	Graniteville.
Canadian International Paper Co.	Three Rivers	Chatham Tp. Wright Co.

## Stone Quarrying Industry—Granite—Concluded

Name	Address	Location
<b>QUEBEC—Concluded</b>		
Chicoutimi, City of	Chicoutimi	Chicoutimi.
Cloutier Bros.	Beebe	Beebe.
Cozzolino, Thos.	Box 2, Arvida	Arvida.
Delwaide and Goffin	Box 315, Chicoutimi	Rang St. Thomas.
Desrosiers, Albert	Beebe Junction	Beebe Junction.
Dumas, Art. & Cie, Engr.	Rivière a Pierre	Rivière a Pierre.
Duncan, Wm.	R. R. No. 1, Beebe	Beebe.
Fraser-Brace Engineering Co., Ltd.	83 Craig St. W., Montreal	Temiskaming.
Gagnon, Louis Philippe	St. David	St. David.
La Carrière Buisserie, Limitee	St. Sebastien	St. Sebastien.
Lacasse and Boulais	Beebe	Beebe.
Lacroix, Alphonse	St. Sebastien Station	St. Sebastien.
McIntosh, Robert	R. R. No. 1, Beebe	Beebe.
Norton, S. B.	Beebe	Stanstead Tp.
Perron, Arthur	Rivière a Pierre	Rivière a Pierre.
Quebec Development Co., Ltd.	56 St. Peter St., Quebec	Alma and Maligne Islands.
Reed, R. M. and Son.	R. R. No. 1, Beebe	Graniteville.
Rigaud Granite Corporation	11 Place d'Armes, Montreal	Rigaud.
Riverin and Riverin Engr.	Chicoutimi Centre	Bagotville.
Roberval Granite Works, Ltd.	Roberval	St. Jerome.
Rouleau, Armand	St. Sebastien	Whitton Tp.
St. Hilaire, Jos.	St. Romuald, Levis	Les Escoumains.
Silver Granite Co., Ltd.	117 Cote d'Abraham, Quebec	St. Samuel Station.
Stanstead Granite Quarries, Co. Ltd.	Beebe	Graniteville.
Voyer, F. et Frère	Rivière a Pierre	Rivière a Pierre.
Westmount Construction Co., Ltd.	28 Royal Ave., N.D.G., Montreal	(Chatham Tp.
Wilkinson, Frank L.	Beebe	Brownsburg.
		Househill.
<b>ONTARIO—</b>		
Chisholm Construction Co., Ltd.	Cornwall	East of Cornwall.
Corporation of City of Fort William	City Hall, Fort William	Fort William.
Gordon, D. J., Granite Co.	239 Confederation Life Bldg., Toron- to 2	Near Gananoque.
Hall, R. Reece	Parry Sound	McDougall Tp.
Horne, Wm., Granite Quarries	19 Welland Court, Winnipeg, Man.	Butler.
Irvine, Edgar, Co., Ltd.	Alexandria	Gananoque.
McLean and Stidwell	Cornwall	Yonge Tp.
Mond Nickel Co., Ltd.	Coniston	Drury and Levack Tps.
Mountain Stone Co., Ltd.	Port Arthur	Port Arthur.
Ontario Department of Public Works	Toronto	Coe Hill.
Ontario Rock Co., Ltd.	410 Crown Office Bldg., Toronto	Belmont and Methuen Tps.
Parker, A. H.	Cornwall	Lansdowne Tp.
Pembroke, Town of	Pembroke	Alice Tp.
Wilford, F. R. and Co., Ltd.	Lindsay	Near Morrisburg.
<b>BRITISH COLUMBIA—</b>		
B.C. Monumental Works, Ltd.	2250 Main St., Vancouver	Granite Island.
Campbell & Ritchie Monumental Co.	507 Front St., Nelson	Nelson.
Coast Quarries, Limited	837 Hastings St. W., Vancouver	Granite Falls.
Cranbrook, City of	Cranbrook	East Kootenay District.
Gilley Brothers, Ltd.	902 Columbia St., New Westminster	Cocquitlam Municipality.
Nelson, City of	Box 1028, Nelson	Nelson.
Poignant, C. E. and C. G.	Matsqui	Matsqui.
Vancouver Granite Co., Ltd.	815 Bower Bldg., Vancouver	Nelson Island.
Vernon Granite and Marble Co.	Box 285, Vernon	Okanagan Landing.
Wilson, James	Sirdar	Sirdar.

## Stone Quarrying Industry—Limestone

<b>NOVA SCOTIA—</b>		
Dominion Iron and Steel Co., Ltd.	Sydney	Pt. Edward, C.B.
Eastern Lime Co. (H. C. Burchell)	Windsor	Windsor.
Nairn, John S.	24 Whitney Ave., Sydney	Scotch Lake.
<b>NEW BRUNSWICK—</b>		
Brookville Manufacturing Co.	Brookville	Brookville.
Peters, C. H., Sons, Ltd.	Ward St., Saint John	Torriburn.
Provincial Lime Co., Ltd.	89 Water St., Saint John	Lawlor Lake.
<b>QUEBEC—</b>		
Bathurst Co., Ltd.	Bathurst, N.B.	Port Daniel.
Beaudry, Joseph P.	Tache St. Joliette	Joliette.
Boileau, Ulric, Ltd.	Montreal	Cote-des Neiges, Montreal.
Canada Carbide Co., Ltd.	Power Bldg., Craig St. W., Montreal	Bedford.
Canada Cement Co., Ltd.	Phillips Square, Montreal	Hull.
Charron, Arthur	Village Belanger	Village Belanger.
Chartrand, Alfred	Village Belanger	Village Belanger.
Chateau Richer Quarry, Ltd.	Chateau Richer	Chateau Richer.

## Stone Quarrying Industry—Limestone—Continued

Name	Address	Location
<b>QUEBEC—Continued</b>		
Cie de Pierre Concassée de la Cote des Neiges, Ltee.	Cimetiere Notre Dame des Neiges, Montreal.	Cimetiere Notre Dame des Neiges, Montreal.
Cite de Salaberry de Valleyfield.	Valleyfield.	City de Salaberry de Valleyfield
Consolidated Crushed Rock, Ltd.	3656 Masson St., Montreal.	Montreal.
Cousineau, Alderic.	5697 St. Urbain St., Montreal.	Montreal.
Deguire Quarry Company.	Suite 2, 207 St. James St., Montreal.	St. Laurent.
Delormier and Rogers Quarry Co.	4901 Iberville St., Montreal.	Montreal.
Deschambault Quarry Corporation.	52 St. Paul St., Quebec.	St. Marc des Carrieres.
Desormeaux, Edgar.	2402 St. Hubert St., Montreal.	Cap St. Martin.
Dominion Lime Co.	East Angus.	Marbleton.
Dupre, Arthur.	St. Michel.	St. Michel.
Durocher, Cyrille.	5383 Notre Dame St. E., Montreal.	Montreal East.
Faubert, Alphonse.	Ville de Lery.	Ville de Lery.
Filion, Adelard.	Lachute.	Lachute.
Fleury, Georges.	Charlesbourg West.	Charlesbourg, West.
Fuger and Smith, Ltd.	Pointe Claire.	Pointe Claire.
Gagnon, Martin.	7794 St. Andre St., Montreal.	Montreal.
Gaspesian Fertilizer Co.	Port Daniel East.	Port Daniel East.
Gauthier, Oliver.	St. Marc des Carrieres.	St. Marc des Carrieres
Gingras Freres, Ltd.	St. Marc des Carrieres.	St. Marc des Carrieres.
Giroux, J. H.	27 rue Plaisance, Three Rivers.	St. Louis de France.
Gravel, Ed. L.	Chateau Richer.	Chateau Richer.
Institution des Sourds-Muets.	7400 St. Lawrence Blvd., Montreal.	Montreal.
Kennedy Construction Co., Ltd.	137 McGill St., Montreal.	Acton Vale.
Lacrenier, Victor.	5110 Chabot St., Montreal.	St. Francois de Sales.
Lapointe, Jos.	74 Montee St. Laurent, Cartierville.	Cap St. Martin.
Lapointe, Emile.	St. Dominique de Bagot.	Cartierville.
Laurentian Stone Co., Ltd.	250 Catherine St., Ottawa, Ont.	St. Dominique.
Laval Quarry Co., Ltd.	Cap St. Martin.	Hull.
Maisonneuve Quarry Co., Ltd.	4740 Iberville St., Montreal.	Cap St. Martin.
Martineau, O. & Son, Ltd.	371 Marie Anne St. E., Montreal.	Montreal.
Michaud, M. A.	St. Joseph d'Alma.	St. Joseph d'Alma.
Montreal Crushed Stone Co., Ltd.	590 Union Ave., Montreal.	St. Vincent de Paul.
Naud and Darveau.	St. Marc des Carrieres.	St. Marc des Carrieres.
Noel, Oscar.	41 Leduc St., Hull.	Wrightville.
Page, Jos.	Charlesbourg West.	Charlesbourg West.
Paquette, Damien.	Village Belanger.	Cap St. Martin.
Paquette, Levi and Co.	Cap St. Martin.	Cap St. Martin.
Quebec Quarry, Ltd.	Giffard, Beauport.	Giffard, Beauport.
Quinlan, John & Co.	1165 Greene Ave., Westmount.	Village Belanger.
St. Laurent Quarry, Ltd.	Cap St. Martin.	Cap St. Martin.
St. Michel Quarry, Ltd.	Ville St. Michel de Laval.	Wille St. Michel de Laval.
St. Vincent de Paul Penitentiary.	St. Vincent de Paul.	St. Vincent de Paul.
Societe Cooperative Agricole de Calcaire de Missisquoi.	Bedford.	Stanbridge.
Standard Lime Co., Ltd.	Joliette.	St. Paul de Joliette.
Stone and Quarry, Ltd.	900 Bellechasse St., Montreal.	Montreal.
Theoret, Magloire.	Bellerive.	St. Francois de Sales.
Tremblay, Nap.	Joffre Ave., Hull.	New Salaberry.
Varin, Jos.	7775 St. Denis St., Montreal.	Hull.
Verreault, Elzear, Ltd.	194 rue du Pont, Quebec.	Cote St. Michel.
Vezina, Joseph.	Ste. Foy.	Giffard.
Villeray Quarry Co., Ltd.	848 du Rosaire St., Montreal.	Ste. Foy.
Wallace Sandstone Quarries, Ltd.	120 St. James St., Montreal.	Montreal.
White Grit Co.	171 Waller St., Ottawa, Ont.	Philipsburg.
Wright & Co.	250 Catherine St., Ottawa, Ont.	Portage du Fort.
<b>ONTARIO—</b>		
Barton Tp. Quarry.	Court House, Hamilton.	Hull.
Beachville White Lime Co., Ltd.	Beachville.	Barton Tp.
Belton, Peter.	St. Catharines.	Beachville.
Beverly Township Quarry.	Rockton.	Graham Tp.
Bolender Bros.	Haliburton.	Beverly Tp.
Bourgie, J. B.	Embrun.	Haliburton.
Brule, E. D. and Sons.	Billings' Bridge.	Embrun.
Canada Cement Co., Ltd.	Montreal, P.Q.	Hog's Back.
Canada Crushed Stone Corporation, Ltd.	Sun Life Bldg., Hamilton.	Thurlow Tp.
Carleton, County of.	71 Sparks St., Ottawa.	Dundas.
Cartmell, E., Estate of.	Thorold.	Osgoode—Gloucester—Nepean.
Cloutier & Grenon.	Casselman.	Near Thorold.
Cook, J. S. & Son.	Wiarion.	St. Isidore de Prescott.
Crystallite Stone Products, Ltd.	Turner Bldg., Hamilton.	Amabel Tp.
Dorchester, North, Township of.	Dorchester.	Bancroft.
Farmer, Geo. and Sons.	45 Bertrand Ave., Ottawa.	North Dorchester Tp.
Farr, L. G. Mrs.	Haileybury.	Goulbourn Tp.
Foster, R. R.	278 Echo Drive, Ottawa.	Haileybury.
Galt, Corporation of.	Galt.	City View.
Gordon Crushed Stone Co., Ltd.	239 Confederation Life Bldg., Toronto.	Galt.
Grant Bros. Construction Co., Ltd.	18 Rideau St., Ottawa.	Hagersville.
Grenville Crushed Rock Co., Ltd.	Merrickville.	Near Cardinal.
Hagersville Contracting Co., Ltd.	72 Sun Life Bldg., Hamilton.	Oxford Tp.
Hagersville Quarries, Ltd.	4 Flora St., St. Thomas.	Walpole Tp.

## Stone Quarrying Industry—Limestone—Concluded

Name	Address	Location
<b>ONTARIO—Concluded</b>		
Humberstone Township Quarry.....	Humberstone.....	Humberstone Tp.
Hydro Electric Power Commission of Ontario.....	190 University Ave., Toronto.....	Niagara and Stamford Tps.
Innerkip Stone Quarry.....	Innerkip.....	Innerkip.
Keeling, James.....	1179-16th St. E., Owen Sound.....	Owen Sound.
Kingdon Mining, Smelting and Mfg. Co., Ltd.....	314 Beaver Hall Hill, Montreal, P.Q.....	Galetta.
Kingston Penitentiary.....	Portsmouth.....	Portsmouth.
Kirkfield Crushed Stone, Ltd.....	136 Confederation Life Bldg., Toronto 2.....	Kirkfield.
Langton, Thos.....	Coldwater.....	Coldwater.
Law Construction Co., Ltd., The.....	625 Confederation Life Bldg., Toronto 2.....	Melancthon and North Gower Tps.
Lincoln County Quarry.....	St. Catharines.....	Clinton Tp.
Longford Quarry Co., Ltd.....	6 Peter St., Orillia.....	Rama Tp.
MacDonald, A. N.....	Bronte.....	Oakville.
McDonnell, Dibblee and Covey.....	26 Victoria Sq., Montreal, P.Q.....	Smiths Falls and Wendover.
McGinnis & O'Connor.....	Kingston.....	Rossmore and Catarqui.
McKay, Alex., Stone Co., Ltd.....	2 Brown's Ave., Toronto.....	Owen Sound.
Oliver Rogers Stone Co., Ltd.....	341 Fourth Ave. E., Owen Sound.....	Owen Sound.
Ontario Department of Highways.....	Parliament Buildings, Toronto.....	
Ontario Department of Public Works.....	Parliament Buildings, Toronto.....	Shelburne.
Ontario Reformatory Industries.....	Parliament Buildings, Toronto.....	Smiths Falls.
Ontario Stone Corporation, Ltd.....	305 Excelsior Life Bldg., Toronto 2.....	North Orillia.
Perkins, Geo.....	Owen Sound.....	Owen Sound.
Pirson, John.....	Stevensville.....	Graham Tp.
Queenston Quarries, Ltd.....	St. Davids.....	Niagara Tp.
Quinlan, Robertson and Janin, Ltd.....	702 Sherbrooke St. W., Montreal, P.Q.....	Crookston.
Quinton & Brundige.....	Jasper.....	Near Brockville.
Bobillard, H. & Son.....	195 Nicholas St., Ottawa.....	Gloucester Tp.
Roddy, J. M.....	293 Division St., Kingston.....	Kingston.
Routly, H. T.....	9 Richmond St. E., Toronto.....	Jarvis.
St. Marys Crushed Stone, Ltd.....	Fleet and Bathurst Sts., Toronto.....	Georgetown.
Standard White Lime Co., Ltd.....	15 Douglas St., Guelph.....	Kincardine.
Stormont, Dundas and Glengarry, Counties of.....	Court House, Cornwall.....	St. Marys.
Thompson, W. G.....	Orillia.....	Beachville.
Walker Bros.....	Thorold.....	Finch Tp.
Webber, John.....	Dunnville.....	Orillia.
Welland County Quarry.....	Court House, Welland.....	Stamford Tp.
Welland Ship Canal.....	St. Catharines.....	Dunn Tp.
Wentworth, County of.....	Court House, Hamilton.....	Humberstone Tp.
Wentworth Quarries, Ltd.....	72 Sun Life Bldg., Hamilton.....	St. Catharines.
Windmill Point Crushed Stone Co., Ltd.....	Ridgeway.....	Barton and Binbrook Tps.
Winnipeg Roofing Co.....	264 Berry St., St. Boniface, Man.....	Salfleet Tp.
<b>MANITOBA—</b>		
Gillis Quarries, Ltd.....	Spruce and Richard Sts., Winnipeg.....	Ridgeway.
Tyndall Quarry Co., Ltd.....	1591 Erin St., Winnipeg.....	Silver Mountain.
Western Stone Co., Ltd.....	St. Boniface.....	
Winnipeg, City of.....	Winnipeg.....	Garson.
<b>ALBERTA—</b>		
Summit Lime Works.....	Lethbridge.....	Winnipeg.
<b>BRITISH COLUMBIA—</b>		
Beale, F. J.....	Bella Bella.....	Garson.
Clarke C. G.....	Quatsino.....	Stony Mountain.
Consolidated Mining and Smelting Co. of Canada, Ltd.....	Trail.....	
Pacific Lime Co., Ltd.....	602 Pacific Bldg., Vancouver.....	Fife.
Powell River Co., Ltd.....	Powell River.....	Texada Island.
Wallen, J. J.....	Port Alice.....	Texada Island.
Western Canada Lime Co., Ltd.....	101 Westminster Block, New Westminster.....	Quatsino Sound.
		Popkum.

## Stone Quarrying Industry—Marble

<b>QUEBEC—</b>		
Brassard, Ovide.....	L'Annonciation.....	L'Annonciation.
Wallace Sandstone Quarry, Ltd.....	120 St. James, Montreal.....	Phillipsburg, Mississquoi Co.
<b>ONTARIO—</b>		
McMillan Marble Quarry.....	Ontario Department of Public Works Toronto.....	Bancroft.

## Stone Quarrying Industry—Sandstone

Name	Address	Location
NOVA SCOTIA— Wallace Sandstone Quarries, Ltd.....	120 St. James St., Montreal, P.Q....	Wallace.
NEW BRUNSWICK— Miramichi Quarry Co., Ltd..... Read Stone Co., Ltd.....	Quarryville..... Sackville.....	Quarryville. Stonehaven.
QUEBEC— Blais, Jos., Engr..... Gagnon, L. P..... Montpetit, Euclide..... Paquet, Adolphe..... Sherbrooke, City of, The..... Silico, Ltd.....	8 Mont Marie Ave., Levis..... St. David..... Melochville..... St. David..... Sherbrooke..... 4 Hospital St., Montreal.....	Levis Co. St. David. Melochville. Levis Co. Ascot Tp. St. Canute.
ONTARIO— Robertson, D. & Co., Ltd..... Rogers, Hurst.....	26 Queen St. E., Toronto..... 1181-1189 Queen St. W., Toronto 3...	Milton. Glen Williams.
ALBERTA— Oliver, Wm.....	1823-16th St. W., Calgary.....	Calgary.
BRITISH COLUMBIA— Canadian Pacific Railway Co..... McDonald, J. A. and C. H.....	Montreal, P.Q..... 1571 Main St., Vancouver.....	Albert Canyon. {Haddington Island. {Newcastle Island.

## APPENDIX ONE

## EXPLANATORY NOTES

*Method of Computing Values Shown in Reports on the Mineral Production of Canada.*

For statistical and comparative purposes it has always been customary to determine the value of the metals on the basis of the quantities recovered from Canadian ores smelted during the year either in Canada or abroad; in making up values the general practice is to use the average price of the refined metal in a recognized market. As some changes have been made in the methods in use, the following notes have been prepared so that the reader may know how the figures of quantity and value have been computed.

*Antimony.*—Recoverable metal in shipments made, valued at the average New York price for the fine metal.

*Arsenic.*—(a) Recoverable arsenic in concentrates exported at an arbitrary value; (b) White arsenic shipped from Canadian smelters at its sales value.

*Bismuth.*—Recoverable bismuth metal in the silver-lead-bismuth bullion shipped to foreign smelters for refining, at an arbitrary value.

*Cobalt.*—Cobalt content of the various cobalt products sold by south Ontario smelters added to the cobalt content of ores and residues exported for treatment in foreign smelters: the value given is the net amount received by the shippers.

*Copper.*—1. Dominion Bureau of Statistics practice up to the end of 1925 was to include as the production of copper, data obtained from the following sources:—

- (a) Copper in matte made by the International Nickel Company and the Mond Nickel Company at their smelters in the Sudbury area;
- (b) Copper in cobalt-nickel and gold ores exported, deductions being made as follows:
  - (1) Copper in concentrates from gold ores less 26 pounds per ton of concentrates;
  - (2) Copper paid for in concentrates from silver-cobalt ores;
  - (3) Copper in concentrates exported (from Quebec) less 20 pounds per ton of concentrates;
  - (4) Blister copper produced at the Trail and Granby smelters;
  - (5) Copper in Britannia mine shipments of concentrates less 10 pounds per ton of concentrates;
  - (6) Copper in all other copper-bearing ores exported less 20 pounds per ton of concentrates.

2. The sum of production as thus determined was valued at the monthly average New York market price for electrolytic copper.

3. Consensus of opinion was that the foregoing method resulted in a higher valuation being put on copper production from Ontario ores than was actually obtained by Canadian producers, and it was held that practice in Ontario would be improved by measuring the copper production at its most advanced state within the province. Formerly, calculations were based on the copper content of matte made at the smelters in the Sudbury area; the new method includes in the item "Production," the copper produced at Port Colborne and the copper in matte and ores exported.

- (a) There has been no change in method either in respect to quantities or values except in the province of Ontario; while it may be suggested that the production of copper from Trail ought to be measured at the refinery rather than at the smelter it is not considered desirable to make this change at the present time owing to the fact that the copper refinery in question operates only intermittently whereas the copper smelter

APPENDIX ONE—*Continued*

has a more continuous record. There may be some disposition to discuss the deductions that ought to be allowed in connection with shipments of copper ores for export, but it is thought this possible change in practice would not be of great moment and it is therefore passed over at the present time;

(b) In computing Ontario's production of copper the procedure is as follows:—

- (1) Copper content of converter copper made at Port Colborne, the value for this output being computed *pro rata* according to the income from sales of copper during the year (as reported by the International Nickel Company of Canada);
- (2) Copper in matte exported from the smelters of the Sudbury area valued at an arbitrary figure agreed upon between the Bureau of Statistics and the Ontario Department of Mines;
- (3) Copper in concentrates from gold ores less 26 pounds per ton of concentrates valued at the monthly average New York price for electrolytic copper;
- (4) Copper paid for in concentrates from silver-cobalt ores exported at its sales value as reported by the shippers.

*Gold.*—Gold in bullion produced and the recoverable gold in all other Canadian mine products valued at the standard rate of \$20·671834 per fine ounce.

*Iron Ore.*—Export tonnages and sales values.

*Lead.*—1. Dominion Bureau of Statistics practice up to the end of 1925 was to evaluate the recoverable lead from all sources at the average price prevailing on the Montreal market during the year.

2. Examination of the returns made to the Bureau shows that sales of lead in ores from the province of Quebec and to the extent of about 80 per cent of the lead sold from Trail, are made on the basis of London quotations; approximately 20 per cent of the lead sold from Trail is marketed in Canada.

3. Lead from Ontario ores finds its market in Canada.

4. Lead ores exported from British Columbia and from the Yukon to points in the United States are subject to a duty of  $1\frac{1}{2}$  cents per pound of lead content (lead in base bullion takes a rate of  $2\frac{3}{8}$  cents per pound.) The difference between the London and New York quotations is approximately equivalent to the duty charge on each pound of lead imported into the United States.

In view of the foregoing facts the following procedure for the evaluation of lead from Canadian ores has been adopted:—

(a) Ontario—Galletta sales, quantity and value.

(b) Recoverable lead in ores exported from Quebec, Yukon and British Columbia as well as lead in base bullion made at Trail valued at the average London quotations during the year as given in the *Engineering and Mining Journal*, the English quotations being converted to Canadian funds at par (\$4·86666).

*Molybdenite.*—Shipments in terms of  $\text{MoS}_2$  at their sales value.

*Nickel.*—Prior to 1925 it was customary in Dominion reports to compute the nickel production of Canada as the sum of the quantity of nickel contained in matte made at the Sudbury smelters and the nickel contained in smelter products from silver-cobalt ores; the value was computed at the average New York market price for virgin nickel. But as all Canada's nickel is derived from Ontario ores, and as the method used by the Ontario Department of Mines differed from Dominion Bureau of Statistics practice, a conference was arranged during 1925, with a view to harmonizing the statistics on nickel. As a result of this conference it was agreed that both offices should compute the quantity and value of nickel production as follows:—

(a) Nickel in matte exported from Canada valued at an arbitrary figure agreed upon between the two offices—(representative of the value of nickel in matte);

APPENDIX ONE—*Concluded*

- (b) Refined and electrolytic nickel produced at Canadian refineries valued at the average price obtained for such products sold during the year;
- (c) Nickel in nickel oxide or salts sold from Canadian smelters and refineries at its total selling value in the form in which it was sold;
- (d) Nickel contained in speiss residues exported, valued at the same price as allowed for nickel in matte.

*Precious Metals, including Platinum.*—Recoverable metals in smelter products at their sales value to the producer.

*Silver.*—Silver bullion produced and the recoverable silver in other smelter products, and the recoverable silver in Canadian ores exported, at the average New York price for the refined metal.

*Zinc.*—Refined zinc produced at Trail and the recoverable zinc in concentrates exported, valued at the average monthly price quoted in London, exchange conversion being made at par.

*Coal.*—Output tonnage evaluated *pro rata* according to income from sales.

*Other Non-Metallic Minerals, Clay Products and Structural Materials.*—Shipments during the year at their respective sales values.

*Imports.*—Statements of quantities and values are based on the declarations of importers, as subsequently checked by government officials.

The value of imported merchandise is the fair market value or the price thereof when sold for home consumption in the principal markets of the country whence and at the time when the same were exported directly to Canada. The *price* and *value* of the goods in every case are stated as in condition packed ready for shipment, the fair value being shown in the currency of the country of export, and the selling price to the purchaser in Canada shown in the actual currency in which the goods were purchased. In the case of goods that are the manufacture or produce of a foreign country the currency of which is substantially depreciated, the value stated is the value that would be placed on similar goods manufactured or purchased in the United Kingdom and imported from that country, if such similar goods are made or produced there. If similar goods are not made or produced in the United Kingdom, the value stated is the value of similar goods made or produced in any European country, the currency of which is not substantially depreciated.

*Exports.*—Statements of quantities and values are based on the declarations of exporters as subsequently checked by government officials.

The value of exports of Canadian merchandise is the actual cost or the value at the time of exportation at the points in Canada whence originally shipped.

*Weight.*—Weight, where shown in imports and exports is the net weight of the goods, excluding the weight of the covers or receptacles, except in cases of certain goods, as provided in the tariff.

The expression *ton* means 2,000 pounds, and *cwt.* 100 pounds, avoirdupois. Where other units of quantity are used, imperial standards apply.

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